

The Astrogram

VOLUME XX NUMBER 19

July 13, 1978

Activities to extend the orbital life of Skylab

NASA has successfully placed America's 77,111-kilogram (85-ton) 36-meter (118-foot) long space station, Skylab, in an orbital position which hopefully will give it a "new lease on life."

A team of engineers and controllers from the Johnson Space Center, Marshall Space Flight Center, IBM, and three tracking stations — Bermuda; Madrid, Spain; and Goldstone, Calif. — have completed a four-month plan of scheduled events to stabilize and trim the orbital position of Skylab.

Maneuvers which began Friday, June 8, and ended Sunday, June 11, placed the space station in an attitude which reduces the atmospheric drag on the vehicle at its orbital height of 389 kilometers (242 statute miles).

Assuming continued functioning of the gyros, this new attitude is hoped to extend by six to 12 months the orbital lifetime of Skylab — to late 1979 or early 1980. This should give NASA additional time to possibly implement a plan it is considering with an early Space Shuttle test flight to carry out a Skylab reboost into higher orbit or controlled deorbit for maximum safety into a remote ocean area.

The weekend maneuvers climaxed activities that began last March when engineers and flight controllers at the Bermuda tracking station began checking out various Skylab systems which would be used and bringing Skylab's batteries to a fully-charged state.

On Thursday, June 8, flight controllers turned on the dormant control moment gyros (CMGs)

which make up a portion of the Skylab attitude control system used to maneuver the space station into a position and hold it. The other part of the system is the thruster attitude control system (TACS) which expels nitrogen gas through nozzles to move Skylab into various attitudes as it orbits Earth.

Both systems are controlled by a computer which has various sensors to indicate position.

Two of the gyros were activated and worked as expected. A third gyro failed during the last Skylab manned mission in 1974 and is not being used.

On June 9, Skylab was commanded into a solar inertial attitude (in which the spacecraft solar cells always face the Sun) using the TACS and stayed in that position under CMG control. However, a spurious signal from an onboard switch selector during subsequent commanding caused Skylab to move from this position. The vehicle automatically switched control to the TACS. On the next orbit, the vehicle was returned to solar inertial and placed under CMG control. For this reason, engineers decided to delay the final maneuver to the low-drag attitude for a day so that Marshall engineers could perform simulations to understand the problem and hopefully prevent it from recurring.

Early Sunday, June 11, Skylab was maneuvered into its desired "end-on-velocity-vector" attitude in which the docking port is forward and its long axis is parallel to the ground and along the flight path.

(Continued on Page 3)

Aeronautics Corporate memory seminars

Over the past two years a considerable number of new employees have been brought into the Center's Aeronautics Programs. This has resulted from the Center's acquisition of the lead role in Helicopter Research, increased emphasis in computational aerodynamics as well as expansion of other elements of the Aeronautics Program. We feel it is important to give these new employees, and others who are interested, a sense of past contributions in Aeronautics, a sense of the individual's role in the overall aeronautical research effort, as well as to define for them the Center's current Major Aeronautics Capabilities and Facilities. To accomplish this, we have arranged the following series of seminars to be held during October/November 1978.

- Oct. 3 (1-3 p.m.) — Dr. R. T. Jones: Recollections from an Earlier Period in American Aeronautics.
 - Oct. 10 (1-3 p.m.) — Mr. B. Wick: Low Speed Aeronautical Research.
 - Oct. 17 (1-3 p.m.) — Mr. L. Jones: High Speed Aeronautical Research.
 - Oct. 24 (1-3 p.m.) — Mr. H. Lomax: Computational Fluid Dynamics.
 - Oct. 31 (1-3 p.m.) — Mr. M. White: Flight Dynamics Research/Simulation Technology.
 - Nov. 6 (1-3 p.m.) — Mr. Seth Anderson: Flight Operations Research.
 - Nov. 13 (1-3 p.m.) — Mr. K. Edenborough: Helicopter Technology.
 - Nov. 20 (1-3 p.m.) — Dr. L. Roberts: Aeronautics Capabilities, Facilities, Objectives.
- For additional information contact J. W. Boyd, ext. 5070.

Shuttle Astronauts visit ARC



The newly selected shuttle astronauts Kathy Sullivan (left) and Sally Ride (middle) are here pictured with Ames Deputy Director's staff assistant Cindy Smith after a recent tour of ARC. The tour was conducted by Mike Wash, technical assistant to the Aeronautics and Flight Systems Directorate.

"Spinoff"

The annual NASA report on the Technology Utilization Program is now available from the Technology Utilization Office (N240, Room 111). This report is the third in the series called "Spinoff." "Spinoff" provides the public with information on the secondary use of NASA developed data and technologies. In the past three years, researchers of Ames have contributed greatly to this program.

Public awareness of NASA contributions to everyone's life style has helped to establish credibility and public advocacy for NASA. The NASA technology utilization effort must continue to maintain its excellence, but in order to do so, it must be supported internally within Ames by everyone. The T.U. office hopes that the people at Ames will help continue the flow of technologies, techniques, and data of public use and interest by sharing any new and innovative ideas with the T.U. office.

Robert F. Allnutt named Associate Deputy Administrator

Robert F. Allnutt has been named NASA's Associate Deputy Administrator, effective July 2, 1978. In this senior staff position, he will report to the Administrator and Deputy Administrator.

Allnutt is currently the Acting Assistant General Counsel for Legislation for the Department of Energy (DOE). He joined the Department's predecessor, the Energy Research and Development Administration in June 1975, as the Deputy Assistant Administrator (Administration). In this assignment, he was responsible for a wide variety of program areas, including procurement, personnel, labor relations, and construction. He received the ERDA Meritorious Service Award for 1976.

Joining the Patent Office in 1957, Allnutt has subsequently served as a patent attorney with NASA, an attorney for the Communications Satellite Corporation, and the NASA Assistant General Counsel (Patents). In 1967, he was named the NASA Assistant Administrator for Legislative Affairs, and then served as a member of the Apollo 13 Accident Review Board while Assistant to the Administrator.

In 1970, Allnutt was appointed Associate General Counsel for the Congressionally-established Commission on Government Procurement, where he advised the Commission on their responsibilities for recommending improved Government-wide policies, procedures, and legislation. In 1973, Allnutt was appointed Staff Director and Counsel of the Senate Committee on Aeronautical and Space Sciences, the Committee with jurisdiction over Federal aerospace research and development activities and over all NASA programs.

Skylab

(Continued from Page 1)

It remains in this position with its TACS inhibited and engineers are continuing to monitor Skylab and to periodically transmit minor corrections to the onboard computer which is maintaining the position.

Skylab was launched May 15, 1973, and was manned during three missions by three different astronaut crews. The last crew departed Skylab February 8, 1974, at an altitude of 445 km (276 statute miles). Skylab presently is 389 km (242 statute miles) above Earth.

At the time the final crew departed, NASA estimated that the orbiting workshop would remain in space until 1983 permitting ample opportunities to reach it on Space Shuttle missions. However, since that time the orbit has decreased at a higher-than-anticipated rate. Contributing to the more rapid rate of descent is an increase in atmospheric drag caused by heavier sunspot activity than had originally been predicted.

Security notice

EMERGENCY VEHICLES. In support of the effort to reduce noise on the base, the Security Department requests that all drivers be alert to the emergency vehicles proceeding with red flashing lights but no siren. Pull over and give the vehicle the right-of-way. If a Security Vehicle is following close behind you with red lights flashing, stop in a safe place as soon as possible. Do not block an intersection. Stay in your vehicle and wait for the patrolman's instructions. Your cooperation is appreciated.

American Scientific Glassblowers

Harry Horn of Ames Research Center is the new Chairman of the San Francisco Bay Area Section of the American Scientific Glassblowers Society. Harry works for Don Moody at the Model

and Instrument Machining Branch Glass Lab. in Building 213. Don is a past chairman of the Section.

Harry's term is for 1978-79 and runs until May of 1979. The San Francisco Bay Area Section consists of Northern California and parts of Nevada.



Harry Horn (left), of Ames' Model and Instrument Machining Branch, receives the charter for the San Francisco Bay Area Section of the American Scientific Glassblowers Society. Horn is the 1978-79 incoming chairman. Also pictured are Al Walrod (middle), the outgoing chairman, of Advanced Radiation Corp., and Herman Vanbragt, National Director.

Stanford-NASA-ASEE Aerospace Technology seminar

July 26 NICHOLAS J. HOFF, Professor Emeritus of Stanford University. Former Chairman, Department of Aeronautics and Astronautics, Stanford University; Clark/Crossan Professor of Engineering, Rensselaer Polytechnic Institute. "Who Invented the Airplane?"

August 2 JOHN BILLINGHAM, Chief, Extraterrestrial Biology Division, NASA-Ames Research Center. "Space Settlements—A New Frontier"

August 9 LEONARD ROBERTS, Director, Aeronautics and Flight Systems, NASA-Ames Research Center. "Air Transportation in the 1980s—Its Prospects and Problems"

IBM typewriter demonstration

IBM has scheduled a demonstration at Ames of two of its typewriters. The Memory Typewriter and the new Electronic Typewriter will be shown on July 27 and August 3 in Bldg. 241, Rm. 237. The show will be put on by Steve Corio of IBM. For further information, reservations, and times, contact Katie Garcia, ext. 5671.

Notice

The move of the Instrument Section of the Model & Instrument Machining Branch from Building 213 to the new location of the upper floor of Building 220 has been completed. The new Mail Stop is 220-2 and delivery point is 220-A. The section may be reached on extension 5463.

The Model & Instrument Machining Branch Glass Lab will remain in the basement of Building 213 at Mail Stop 213-7, delivery point 213-A, and the telephone extension will remain 5462.

Bowling tournament

Ames was represented by two teams in the Federal Postal Bowling tournament held recently at Mel's Bowl in Redwood City. The tournament brought in over 250 bowlers from all over California. Five places were awarded and the Ames teams captured two of these. The team of "Cossey's Posse" placed third. Team members were Cathy Cossey, George Rathert, Ina Rathert, Gary Nolt, and Robert Murphy. Fourth place was awarded to "Tardio's Stingers" whose team members are: Sal Tardio, Frank Lazzeroni, Wayne Harry, Ernie Porter, and Ed Tischler. Individual honors went to Hank Cole and Judy Long for placing 16th and 17th, respectively, in the singles event, and Tony Astalfa placed 6th in the all-events division.

"Thank you"

Paul and Virginia Dexter want to thank everyone in anyway involved with Paul's retirement luncheon for the warm send-off. It got quite warm indeed, thanks to the very articulate Joe Auby. The momentos and gifts are treasured — but not as much as the memories of the wonderful associations made at Ames over the years. The one great drawback to retirement is losing the daily contact with you great people. It has been a real privilege to know and work with you. Thank you all very much, and best wishes. Paul Dexter.

NASA/Ames Research Center CALENDAR OF EVENTS

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

PREPARED BY:
VISITS COORDINATOR
965-5546 M.S. 253-1

JULY 24 Please notify the visits coordination office of all center activities. Mail Stop 253-1, Ext. 5546.	JULY 25 Energy 2020 Seminar Speaker: Lee Schipper Energy and Environment Division Lawrence Berkeley Laboratories Topic: Doing Better, Not Without Time: 3:30 p.m. Location: N-201 Main Auditorium	JULY 26	JULY 27 Flight Dynamics & Controls Branch Seminar Speaker: Dr. Clyde F. Martin NRC Senior Research Associate Flight Dynamics & Controls Branch Topic: Complexity of Linear Systems in the Presence of Their Structural Change Time: 2:30 p.m. Location: N210, Rm 105	JULY 28
JULY 31 Space Science Div/Astrophysics Seminar Series Speaker: Dr. Monica Beltrametti Max-Planck Institut fur Physik und Astrophysik Fohringer Ring 6 8000 Munchen 40 Federal Republic of Germany Topic: Radiatively Driven Quasar Winds Time: 3:30 p.m. Location: N-245 Auditorium	AUGUST 1 Energy 2020 Speaker: Allen Hammond Editor, Research News, Science Magazine Topic: Sunpower and Earthpower Time: 3:30 p.m. Location: N-201 Main Auditorium	AUGUST 2	AUGUST 3	AUGUST 4
AUGUST 7	AUGUST 8 Energy 2020 Speaker: David Morris Director Institute for Local Self-Reliance Topic: Local is Beautiful Time: 3:30 p.m. Location: N-201, Main Auditorium	AUGUST 9	AUGUST 10 Please notify the Visits Coordination Office of all Center activities. Main Stop 253-1, Ext. 5546	AUGUST 11

WEEKEND ACTIVITIES:

Saturday, July 29, 1978 -
Golf Tournament
Santa Theresa Golf Course
11:00 a.m.
Tournament Directors:
Edward Tischler
George Rathert

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
78-131	Voucher Examiner	GS-3/4/5	AFG	Centerwide and Outside	7-28-78
78-132	Electronics Technician	GS-7/9	FSA	Centerwide and Ames/Army	7-28-78
78-133	Secretary (Typing)	GS-4/5	FAX	Centerwide and Outside	7-28-78

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
78-86	Administrative Specialist (STEP), GS-5/7	SEM	Cancelled
78-94	Progressman (2 positions)	RSP	Paul Kovalak Jack Osorno
78-95	Electrical Engineer	RFS	Cancelled
78-98	AST Experimental Facilities and Equipment	RFR	John R. Allmen
78-99	N/C Programmer (2 positions)	RSM	Kenneth Allen Paul Swartz
78-103	AST, Technical Management	F	Masayuki Omuri

Certification of electrical technicians

Electrical and electronic technicians should begin preparing for the Certified Engineering Technician (CET) examination to be given on October 28 by the National Society of Professional Engineers.

A 9-week classroom review covering mathematics, physical sciences, and engineering skills will be held at Menlo College in Menlo Park starting August 21. The course is offered by the Professional Engineering Registration Program. Descriptive literature and examination applications can be obtained from the program by calling (415)593-9731.

Certification is the only official recognition of ability, achievement, and professionalism available to engineering technicians. The CET license is recognized nationally, needs no renewal exams, and is valid in all states.

Want ads Transportation

For Sale: 1974 BMW R90/6, blue & white, Windjammer Fairing, Ez Berg Custom Seat, \$2,200. Evenings 736-2963.

For Sale: 1973 International Scout, 4-speed, 4x4, deluxe interior, excellent condition, original owners, 33K mi., \$3,750. Call 294-2994 after 5:00 p.m.

For Sale: 1963 Chev 1/2-Ton Pickup, 327 V8, 4-speed, camper shell, new tires, shocks, brakes, etc., excellent condition, \$995. Call 251-9779.

1968 Chrysler, 9-passenger station wagon. Call 248-8395.

1967 MGB w/roll bar, runs great, 55,000 miles, just tuned, ready for the summer, \$1300/offer. Call 255-1500, Ext. 501 between 8:00 and 4:00 p.m.

For Sale: 1974 Datsun 260Z, 4-speed, air cond., AM/FM stereo/8-track, 77,000 miles, \$4,500 or best offer. Call 792-1229 after 5:00 p.m.

For Sale: 1962 Chevrolet Biscayne, 4-door, 6 cylinders. Best offer. Call 288-5647 after 6:00 p.m.

For Sale: 1972 truck and camper, Chev. camper special, Longhorn 3/4-Ton Pickup, 42K mi., 350 cu, 7,500 GVW, air, PS, PB, auto, no spin diff., aux springs, H.D. front springs, H. D. shocks, new tires, 8 1/2 ft bed, 25 gal aux tank, stereo speakers, dual batteries. Camper: Vacationer 10 1/2 plus 1/2, four burner stove, oven, ref., double sink, sleeps four, \$5,035.00. Call 244-7310.

Housing

Comfortable 3-bedroom house, furnished, available for one year only beginning Aug. 15, no pets, Sunnyvale. Call 733-5737.

House for Sale: 3 BR, 2BA, fireplace, double garage, king sized covered patio, playground, nice landscaping, fruit trees, 11 mi from Ames in super location close to schools and shopping. Priced low (honestly!) to sell fast by owner. 253-4475.

Miscellaneous

Wanted: To talk to persons interested in a van pool from the San Lorenzo Valley of Santa Cruz County. Proposed route is Highway 17, 280 with a possible stop at Summit Road. Call Keith Sorenson at Ext. 6132 or 335-3698 after 6:00 p.m.

Brittany Spaniel, Male, 3 years old, beautiful markings, smart, housetrained. Free to good home - adults - room to run. Call 248-4690.

For Sale: Boy's 20-inch bicycle, new sting-ray seat and handlebars, \$25. Call 253-6016 after 6:00 p.m.

Zebra Finches, \$10.00 pair. Call 735-0733.

For Sale: Kodak Retina IIIC camera, \$100. Call 322-6143 evenings/weekend.

Wanted: 10-speed bike 25-25 1/2". Karl Dake X6584.

For Sale: 1976 Tahiti Super Tiger, 460 Ford, Berkeley Jet, O.T. pipes, white hull with gold accent and brown trim, saddle interior. Lots of chrome and detail work. Like new, \$6,000 (includes trailer and coast guard equipment). Call after 7:00 p.m. (408)578-9057.

Philco refrigerator, works well, \$25.00/offer. Call 738-2948.

For Sale: 30-06 Enfield \$125, 30-06 Springfield \$150. Call 657-2017.

For Sale: World's most popular Sailing Dinghy, 11', car-toppable, over 60,000 sold. Complete kit only \$470 or ready-to-sail at \$660. Call (408)257-2063.

CHAIR and OTTOMAN; new \$300; white, brown, black Herculon design. Excellent condition. \$100. Call 246-3616.

For Sale: 9mm S&W Model 39, semi-auto, double action, still in box, never used, \$175. Call (408)354-2682 after 6:00 p.m.

For Sale: IIDA 5 string banjo. Excellent condition, with case; has 5th string capo. \$325.00. Call 964-7062 evenings.

San Francisco Symphony Series at Flint Center, Cupertino, complete 78-79 series available at 10% below subscription price, 2 seats, 6th row center orch. Call 733-5737.

Baby changing table, perfect condition, \$15. 733-5737.

Gifts for all occasions hand made. Call 961-4105.

Wrought iron dining room set with velvet chairs. Matching bar stools and swivel rocker. \$250 for all or will sell separately. Large animal cage, \$20. Call 253-4475.

For Sale: BALBOA 26 trailerable auxiliary cruising sloop. Fast, stiff, heavily rigged, great for Bay or lakes. Self-contained, use as travel trailer en route. With trailer, outboard, lots of extras. Call 736-1357.

Loving dog - Lab-Huskie needs involvement with caring family. Wonderful companion for right person. Free to good home only. Call 293-8574.

The Astrogram

Admin. Mgt. Building, Phone 965-5422

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QSRA makes first flight and lives up to its name

(Parts reprinted from *The Boeing News*, July 13, 1978)

The sound produced by the engines of the Quiet Short-Haul Research Aircraft during its maiden flight on July 6, 1978 was almost overshadowed by surrounding activity.

The exclamations of the crowd watching the takeoff and the whirr of a helicopter carrying photographers above the runway blended with the muffled whine of the plane's engine to add to the excitement of the event.

The QSRA, built by Boeing under a contract from the National Aeronautics and Space Administration, is actually a remanufactured twin-engine C-8A "Buffalo" airplane originally produced by de Havilland Aircraft of Canada, Ltd. It is an experimental aircraft aimed at developing the technology for quiet short-haul commercial airliners of the future with short takeoff and landing capabilities.

John Cochrane, NASA program manager for the QSRA, was standing in an observation area during the takeoff, photographing the plane with a movie camera. He flew to Everett afterward to see the landing.

"It was just super," he said, moments after the plane disappeared to the south. "It was a partial power takeoff and it was the first flight. Very conservative. But you might have noticed it was very quiet and that's the thing that's impressive... We're very happy with it."

The day's activities began shortly after 10 a.m. when the test pilots — Boeing's Tom Twiggs and NASA's Jim Martin — met with reporters at the flight center.



Taking off for a successful 1 hour and 15 minute flight, the NASA-Ames' Quiet Short-haul Research Aircraft (QSRA) left the ground for the first time July 6 at Boeing Field in Seattle, Washington. The one-of-a-kind experimental craft is designed to demonstrate very high lift and quiet operation. Its purpose is to develop technology for quiet short-haul commercial airliners of the future with short takeoff and landing capabilities and to explore operating procedures of such an airplane in the airport terminal environment.

A \$21 million modification program at Boeing gave the twin-prop de Havilland of Canada "Buffalo" aircraft a new wing, tail, and avionics, and four overwing jet engines to provide "upper surface blowing" for high lift. After two months of initial flight testing at Boeing, the aircraft will be flown to Ames for two years of additional tests.



QSRA pilots Jim Martin (left), NASA/Ames, and Tom Twiggs, Boeing, pause before boarding the experimental aircraft for its maiden flight on July 6.

Martin gave newsmen an advance description of the flight, saying "Typically, first flights are strictly air worthiness and we will not be making any kind of high performance takeoff or landing. It will be very conventional. Partial power will be used for takeoff and the landing will be made using conventional landing configurations. So basically, it's an air worthiness shakedown flight."

The plane wobbled for the first few seconds of its flight and some observers remarked that they thought they saw "smoke" trailing from the wings.

After the flight Twiggs, who was at the controls during both takeoff and landing, explained that the initial unsteadiness of the plane was caused by a failure in the lateral stability augmentation system — an automatic system to keep the plane stable during flight. The pilots switched off the system and flew the plane manually, correcting the motion problem.

"We shut the system off and it flew quite well," Twiggs said. "In fact, it flew much better than we expected it to. It was better than we've seen in the simulator."

Twiggs said those who reported "smoke" trailing the plane were probably seeing condensed water vapor forming in the vortex created by the wings.

Martin commented, "I didn't see any surprises. The QSRA simulation at Ames was one of the most accurate simulations I've flown. The failure modes we studied in the simulator saved the day in the first few moments of the flight." *Continued on Page 3*

1978 Bond Chairperson praises ARC

Thanks to all of you here at Ames, the U.S. Savings Bonds Campaign for 1978, "The Bond Helps All," has been a great success. All objectives of the campaign have been fulfilled — we retained our Minute Man Flag, added a third star, and realized our "hoped for goal" of 80% participation.

I would like to share with you the final results of the campaign. You are already aware that Ames attained 80.5% participation this year, our highest level ever. Consequently, we can be proud that we have maintained the recent upward trend in participation started in 1974. The accompanying graph presents campaign results from 1974 to 1978 in two curves; the lower curve represents the participation level at the start of each campaign and the upper curve shows the final participation figures.

As with any voluntary activity, the final results (of this U.S. Savings Bonds Campaign) reflect the level of interest and support of individual organizations. Detailed results are shown in the accompanying tables for Directorates, Offices, and Divisions. All Directorates improved their level of participation, but the honors must go to the Administration Directorate which achieved an improvement of 24% overall! Also, the cold statistics cannot adequately show the interest and intense effort of individuals in preaching the gospel to non-believers of payroll deduction. Far and away, the honor here belongs to Dr. Dale Compton for his dedicated effort.

Again, sincere thanks to all of you for your support in the 1978 U.S. Savings Bond Campaign.

Ken Nishioka, Campaign Coordinator

	No. of Employees	Participation Start	Finish
Center-wide	1622	68.8%	80.5%

DIRECTORATES

Code	Organization	Leader	No. of Employees	Percent Participation Start	Finish
A	Administration	Brennwald	209	67	91
D	Director	Syverson	43	79	87
F	Aeronautics	Roberts	417	66	76
L	Life Sciences	Klein	138	55	71
R	Research Support	Bright	425	71	82
S	Astronautics	Chapman	390	72	80

Offices

Code	Organization	Leader	No. of Employees	Percent Participation Start	Finish
AC	University Affairs	Tomberlin	2	100	100
AR	Resource Management	Peterson	9	55	88
AU	Technology Utilization	Kubokawa	5	60	80
FD	Helicopter Systems	Christensen	4	25	100
RI	Institute for Advanced Computation	Smith	8	87	85
RM	Facility Maintenance & Operations Management	Tunnell	1	100	100
SC	Chemical Research Projects	Parker	17	64	82
AA	Service & Supply	Hammond	30	73	86
AF	Financial Management	Shawlee	39	76	100
AP	Personnel	Pike	32	62	96
AS	Procurement	Mead	54	61	90
AT	Technical Information	Bennett	31	64	80
FA	Aerodynamics	Petersen	106	79	83
FH	Helicopter Technology	Edenborough	9	22	100
FL	Simulation Sciences	Rathert	49	59	63
FO	Aircraft Operations	Reese	73	49	66
FS	Flight Systems	Snyder	128	66	72
FV	V/STOL Aircraft	Deckert	42	88	95
LB	Biosystems	Johnson	26	53	84
LM	Man-Vehicle System	Chambers	23	78	78
LR	Biomedical Research	Sandler	40	55	84
LX	Extraterrestrial Biology	Billingham	43	51	51
RF	Facilities & Instrumentation	Giovanetti	129	72	84
RK	Computation	Bines	54	75	74
RQ	Reliability and Quality Assurance	Demuth	6	100	100
RS	Technical Services	Stoller	220	68	81
SA	Pioneer	Hall	56	76	76
SE	Airborne Missions & Applications	Knutson	57	70	86
SP	Space Projects	Nunamaker	40	67	82
SS	Space Science	Compton	75	57	70
ST	Thermo & Gas Dynamics	Peterson	139	79	82

All-Ames 1978-79 Bowling League

September 5th seems a long way off, but it will be here before we know it! We have a lot of planning ahead to make this one of our best seasons yet. The new officers are: Dennis Riddle, President; Steve Kanally, Vice President; and Fran Kaster, Treasurer. Mary Ann Kelley, the elected Secretary, regrets that she will not be able to bowl with us this season. Therefore, we are looking for a volunteer to handle the secretarial duties — pays \$15.00 per week.

I would like to extend a word of thanks to our officers from last season — Tom Wills, Jim Peterson, Katie Garcia and Carol Anderson — for a job well

done. It's a lot of work and many headaches — thanks for giving the league your all!

At this time, I request that individuals (and teams) notify me as soon as possible if you are planning to bowl with us on Tuesday nights at Camino Bowl in Mountain View. Starting time is 6:15. We will not bowl on December 26th, Christmas week. Also, if you would like to be considered for Secretary, please let me know. The sooner I know who will be bowling, the sooner I can set up meetings to establish the new constitution. Please send or phone your inputs to me at M.S. 237-10 or ext. 6085. Happy Bowling! Dennis Riddle

Women's Advisory Group

The Women's Advisory Group will periodically be sponsoring articles in the Astrogram about subjects of interest to Ames personnel — both women and men. We feel that one of our functions is to distribute information affecting working women at Ames. We will also be sponsoring women's discussion groups and other activities. We would like to hear from you. If you have suggestions or questions, please call a member of the Women's Advisory Group.



Members of the Ames Women's Advisory Group include (back row, left to right) Janie Kendrick, Lesley Whitaker, Natalie Bossio; (front row, left to right) Dean Kersten, Janet Glabb, Annette LaBoy, Anne Goodwin and Sue Ann Sue. Not pictured are Chairperson Sue Norman and member Bea Morales.

Proposed changes

PROPOSED CHANGES TO BECOME A REALITY? Proposed changes in the way some federal workers are compensated was one of the civil service issues addressed in President Carter's fiscal year 1979 budget. This issue has been raised during previous administrations, but it now appears closer to becoming a reality. The Federal personnel management project has recommended legislative changes in the Federal pay system to improve the process of setting pay on the basis of comparability. These proposals include splitting the present general schedule into two separate pay systems — a clerical and technical schedule based on local private sector rates — and another for the remainder (professional and administrative employees), who would continue to be paid on a national basis. It has been stated that the administration desires to do away with features that, in its opinion, result in federal workers being paid more than their private industry counterparts. The Civil Service Commission is considering extending the comparability base to include fringe benefits in its consideration to establish total comparability with the private sector. Each year after private sector settlements have been tabulated and fit to the government's system, federal employees in the clerical and technical schedule would receive higher or lower levels of benefits and pay if these proposals are enacted as legislation.

Write to your Congressional representatives if you desire further information as to the status of these proposed changes. Let your representatives know how you feel NOW, not after a proposal becomes a reality and legislation goes into effect.

"Thank you"

To all my friends at Ames,

To everyone of you who made my retirement luncheon a memorable occasion, I wish to say thank you. The rod, reel, and ice chest will be used often with much pleasure.

The long association I have had with all of you will not be forgotten.

Sincerely
Ted Foster

NASA/Ames Research Center

CALENDAR OF EVENTS

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

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VISITS COORDINATOR
965-5546 M.S. 253-1

<p>July 31 Space Science Div/Astrophysics Seminar Series Speaker: Dr. Monica Beltrametti, Max-Planck Institut fur Physik und Astrophysik, Fohringer Ring 6, 800 Munchen 40, Federal Republic of Germany Topic: "Radiatively Driven Quasar Winds" Time: 3:30 p.m. Location: N-245 Auditorium</p>	<p>August 1 Energy 2020 Speaker: Allen Hammond, Editor, Research News, Science Magazine Topic: Sunpower and Earthpower Time: 3:30 p.m. Location: N-201 Main Auditorium</p>	<p>August 2 Stanford-NASA-ASEE Aerospace Technology Seminar Speaker: John Billingham, Chief, Extra-Terrestrial Biology Div., NASA-Ames Research Center Topic: "Space Settlements - A New Frontier" Time: 8:00 p.m. Location: Stanford University Skilling Bldg., Room 080 (Auditorium)</p>	<p>August 3 IBM Typewriter Demonstration of the Memory Typewriter and the New Electronic Typewriter Time: Beginning at 8:30 a.m. Location: N-241, Room 237 Contact: Katie Garcia, ext. 5671</p>	<p>August 4</p>
<p>August 7 Space Science Div/Astrophysics Seminar Series Speaker: Dr. Jean Eilek, National Radio Astronomy Observatory, Charlottesville, VA 22901 Topic: "Recent Results in Quasar Astrophysics" Time: 12:00 Noon Location: N-245, room 215</p>	<p>August 8 Energy 2020 Speaker: David Morris, Director, Institute for Local Self-Reliance Topic: Local is Beautiful Time: 3:30 p.m. Location: N-201 Main Auditorium Space Science Div/Astrophysics Seminar Series Speaker: Dr. Jean Eilek, National Radio Astronomy Observatory, Charlottesville, VA 22901 Topic: "Recent Results in Quasar Astrophysics" Time: 12:00 Noon Location: N-245, room 215</p>	<p>August 9 Stanford-NASA-ASEE Aerospace Technology Seminar Speaker: Leonard Roberts, Director, Aeronautics & Flight Systems, NASA-Ames Research Center Topic: "Air Transportation in the 1980's - Its Prospectives and Problems" Time: 8:00 p.m. Location: Stanford University Skilling Bldg., Room 080 (Auditorium)</p>	<p>August 10</p>	<p>August 11</p>
<p>August 14 Energy 2020 Speaker: Earl Cook, Dean of Geosciences, Texas A & M University Topic: Whose Finger on the Switch? Time: 3:30 p.m. Location: N-201 Main Auditorium</p>	<p>August 15 Energy 2020 Speaker: Earl Cook, Dean of Geosciences, Texas A & M University Topic: Whose Finger on the Switch? Time: 3:30 p.m. Location: N-201 Main Auditorium</p>	<p>August 16</p>	<p>August 17</p>	<p>August 18 If you are submitting an article to the Astrogram announcing a coming event scheduled for a certain date and would like that information to be included on this calendar, please notify the Visits Coordinator, Linda Mackey, ext. 5546, Mail Stop 253-1.</p>

WEEKEND ACTIVITIES:

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

AMES RESEARCH CENTER

August 1, 1978 thru August 7, 1978

A LA CARTE MENU

TUESDAY	Roast Pork and Dressing.....	1.45
	Beef Enchiladas with Chili Beans.....	1.30
	Choice of One: Whipped or O'Brien Potatoes, Carrots Vichy or Buttered Broccoli or Salad	
	Soup - Minestrone.....	.30 & .45
WEDNESDAY	Pot Roast with Potato Pancake.....	1.45
	Ham and Macaroni Au Gratin.....	1.30
	Choice of One: Whipped or Au Gratin Potatoes, Green Peas, or Zucchini and Tomatoes or Salad	
	Soup - Cream of Potato.....	.30 & .45
THURSDAY	Boiled Corned Beef and Cabbage.....	1.45
	Meat Balls and Spaghetti.....	1.45
	Choice of One: Rice Pilaf or Boiled New Potatoes, Fresh Carrots or Green Beans or Salad	
	Soup - French Onion.....	.30 & .45
FRIDAY	Chicken Fried Steak with Mushroom Sauce.....	1.45
	Baked Cod with Seafood Newburg Sauce.....	1.45
	Choice of One: Scalloped or Snowflaked Potatoes, Spinach Au Gratin or Cauliflower and Peas or Salad	
	Soup - Clam Chowder.....	.30 & .45
MONDAY	Smothered Beef Liver with Onions.....	1.45
	Baked Stuffed Zucchini.....	1.30
	Choice of One: Snowflaked Potatoes, Rice Pilaf, Baby Lima Beans, Broccoli or Salad	
	Soup - Fresh Vegetable with Spaghetti.....	.30 & .45
DAILY SPECIALS	INCLUDES: A \$1.55 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	1.80
	(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP.....	1.10
	DAILY DIET SPECIAL	
	(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

	HOF BRAU MENU	
	(Sandwich with Choice of French Roll or Bread)	
DAILY	Rare Roast Beef, Pastrami, or Corned Beef.....	1.65
TUESDAYS	Ham.....	1.65
THURSDAYS	Turkey.....	1.65
	Sausage Sandwich on French Roll.....	1.05

	AN ASSORTMENT OF SALADS, INCLUDING SHRIMP LOUIE.....	1.60
	AND CHEF'S SALAD (are available).....	1.45

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Space Administration
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NASA

Ames professionals tell students "What's up"

More than 1,500 people — most of them teenagers — took a look into the future of aviation and space research at "What's Up," an all-day workshop at Mills High School in Millbrae, featuring both speakers and displays from Ames Research.

The idea for "What's Up" grew from about two dozen space-enthusiast students at Mills, who were interested in hearing the professionals' views of what is now known about space, how research is conducted, how this research will affect average people's futures, and what types of career opportunities will be developing for people who will be finishing school in the next 5 to 10 years.

The students began with, among other people, Garth Hull, of Ames Educational Programs Office, and eventually they put together a program with 52 seminar sections on topics ranging from UFO research to life-support systems and space colonization. The space shuttle program was a special attention-getter because one of the Mills students has developed an experiment (measuring use of energy in space) accepted as part of the material to ride the 1980 launch.

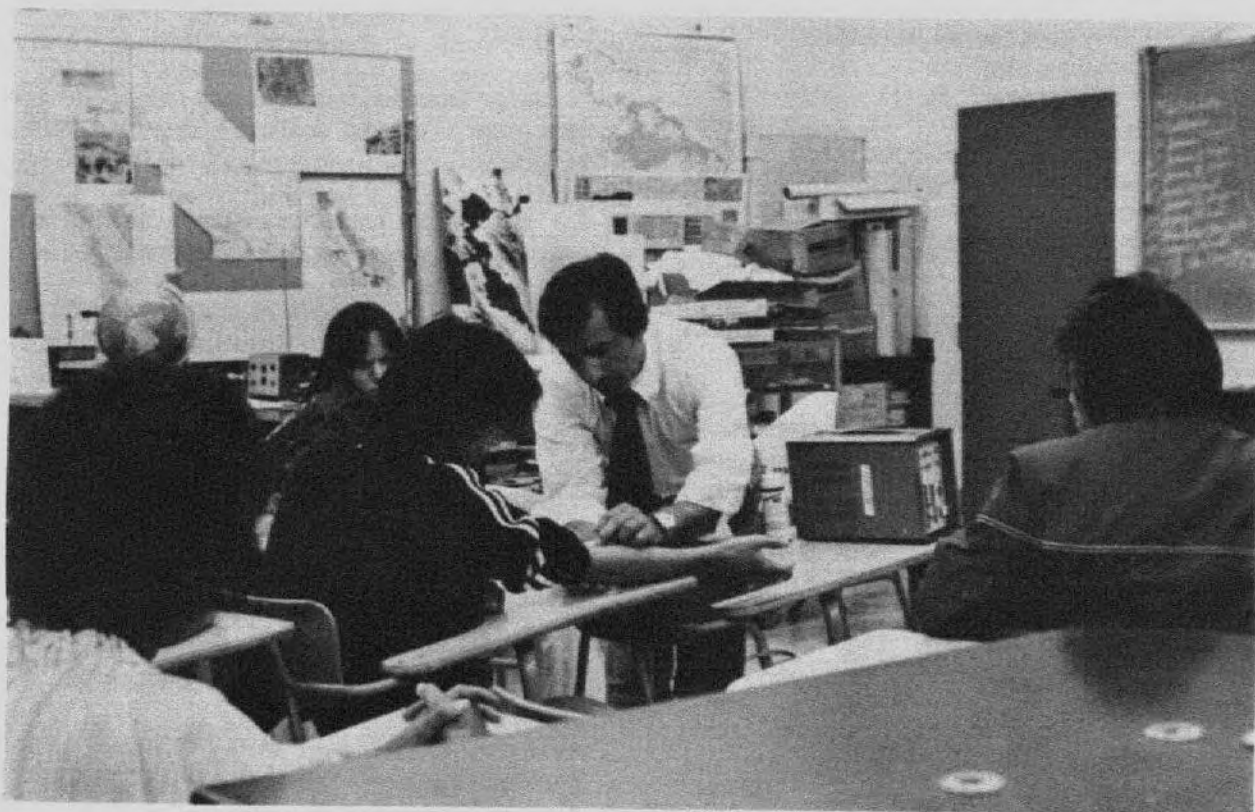
Instead of attending their usual classes, students attended seminars of their choice, chatted with speakers over lunch, and visited a variety of displays, including NASA/Ames' moon rocks, space lab mock-up and Skylab space suit display. They ended the day with a Star-Gazer lecture and dozens of

"hands-on" telescopes provided by the San Mateo Astronomical Society.

Several parents, community residents, and students from neighboring schools also attended.

"This program was one of the most outstanding educational experiences ever to take place in our community and NASA/Ames deserves a major share of the credit for making it possible," said Dwight C. Moser, Mills principal.

NASA/Ames participants, and their seminar topics, were Jeff Cuzzi, *Search for Extraterrestrial Intelligence*; Herbert L. Holley, *Everyday Benefits Gained from the Space Program — You Can't Eat Moon Rocks*; Salvador A. Rositano, *Bio-instrumentation — Space Medicine*; James G. Lawless, *Extraterrestrial Biological Life*; Phillip Quattrone, *Life Support Research*; Allen Meyer, *Infra-red Astronomy*; Garth Hull, *General Space Shuttle Program*; Frederic Baker, *Electronics in Aviation*; B. Michael Donohoe, *Selecting a Vocation in Aerospace*; Thomas Almojuela, *Helicopter Research*; Arthur Gobets, *Designing Draftsmen — Aerospace*; Warren Hall, *Research Test Pilots*; Edward Gan, *Materialization of Dreams, Unlimited*; Clarice Lolich, *Training as an Astronaut*; William Horvath, *Planetary Exploration — Outer Planets*; James Boyle, *Planetary Exploration — Inner Planets*; Walter A. Reinhardt and James P. Hart, *Computers and Graphics in Aerospace Research*.



Ames Research Engineer Salvador A. Rositano demonstrates how special medical equipment measures the speed of blood flow — an important thing to know if you're trying to get a person of average physical condition safely in and out of a space flight. The program was one of several provided by Ames for students and residents of Mills High School, Millbrae, for "What's Up," an all-day workshop on aviation and space technology.

Want ads Continued from Page 4

Miscellaneous

For Sale: Ping-pong table, \$15; Nuclear film cleaner, \$25; portable cassette recorder, \$20; stereo console, \$30; cage and cockatiel, \$45; parakeet, \$20; fish and 15-gallon tank, \$25; 10-gallon, \$15; disassembled Honda 2-cyl motor, \$20; 377-1302 after 4 p.m.

For Sale: All wood, Spanish-made bookcase-hutch. 5 years old. Approximate size 100" wide by 85" high by 20" deep. Base separates from top. Has drawer space and some movable shelves. Asking \$600 but will bargain. For more information, call 739-4266 after 6 p.m.

For sale: 19" Zenith portable TV, black/white w/stand, asking \$50. Music cabinet, mahogany wood, 30½x18½x23½ in., asking \$100 (or best offer). (408)243-5729.

BASSETT 4-drawer chest, dark pine, new cond. \$75; twin mattress and padded bed board, new cond. \$30. Call 732-8362.

For sale: new Heathkit H9 video terminal. Will work with any computer, microprocessor, or modem. Built and tested, \$650. Call 967-3202.

QSRA

Continued from Page 1

The plane reached a maximum altitude of 6,500 feet and flew up to 120 knots, the maximum speed allowed by engineers for the first flight.

George S. Kelley, Boeing QSRA program director, after attending a debriefing with the pilots on Friday, said the first flight went "particularly well." He said the problem with the stability augmentation system did not appear to be critical and program personnel were working on it.

"The airplane's performance, based on what we know from the first flight, was pretty much predicted from the wind tunnel testing and the simulator testing," Kelley said. "Apparently, our testing gives us an adequate base for determining flight characteristics."

Boeing had provided a detailed mathematical model of the QSRA with data based on a series of three NASA conducted 0.55 scale model tests in the Ames 40 X 80 Wind Tunnel. The implementation of the math model into a highly successful flight simulation was accomplished on the Ames FSAA by NASA and Computer Sciences personnel.

Cochrane, who also attended the debriefing, said it was a "very successful flight," accomplishing almost all of the test objectives. He complimented the pilots on their quick work in dealing with the stability augmentation system problem. Cochrane said the flight took place close to the time that was scheduled nearly three years ago.

As of July 20, ten flights have been completed with a total flight time of 13 hours. All of the objectives of the Boeing pre-ferry flight program have been accomplished with the exception of the noise tests. The QSRA is now scheduled to be flown to Ames in early August.

TRW gets contract for materials processing in space

TRW Defense and Space Systems Group has been selected by NASA for negotiations leading to the award of a contract for the Materials processing in Space-Spacelab program. The contractor's estimated cost is approximately \$9.7 million.

TRW will serve as prime contractor for the various aspects of the Materials Processing in Space (MPS) program which will utilize Spacelab and related facilities. This contract will be for the initial phase of the MPS-Spacelab payloads project and is expected to begin in September 1978 and continue through 1981.

This contract is to develop and support the operation of specialized and general purpose payload systems that will accommodate a variety of different materials processing experiments during a series of recurring Earth orbit missions of the Space Shuttle. The first series of experiments to be performed were selected from proposals sent to NASA by scientists from throughout the United States and numerous foreign countries.

Objectives of NASA's MPS program in which these and other related experiments will be performed are to study new or improved processes and to identify candidate products of initial commercial interest. Areas of immediate interest include electronic materials, metals, glasses and certain chemicals produced by processes such as crystal growth, solidification and containerless processing.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
78-134	Secretary (Steno) or Secretary (Typing)	GS-5/6	AS	Centerwide	8-11-78
78-135	Secretary (Typing) or Secretary (Steno)	GS-4/5	LM	Centerwide	8-11-78
78-136	Secretary (Typing)	GS-4/5	LMS	Centerwide	8-11-78
78-137	Model Maker	WG-14	RSC	Centerwide	8-14-78
78-138	Secretary (Typing)	GS-4/5	DOQ	Centerwide	8-11-78
78-139	Secretary (Typing)	GS-4/5	DOS	Centerwide	8-11-78
78-140	Contract Specialist	GS-5/7	ASA	Centerwide	8-18-78

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
78-92	Secretary (Typing)	RKD	Catherine Watson (outside candidate)
78-93	Secretary (Typing)	RKG	Evelyn Romero (outside candidate)
78-96	Structural Engineer	RFR	Alan Fong
78-96	Civil Engineer	RFR	Cancelled
78-97	Mechanical Engineer	RFE	Forrest Seitz
78-100	Personnel Clerk (Typing)	APX	Shirley Carlson
78-106	Purchasing Agent	ASP	Georgia Benson
			Angela Mock (outside candidate)
			Linda Lee (outside candidate)
78-107	Electronics Technician	FOS	Cancelled
78-120	Travel Clerk	AFP	Cancelled

Want ads Transportation

1970 Triumph GT6+, wires, overdrive, good interior, tires, \$1800. 744-0849 anytime.

For Sale: Two Ford truck or van tires with rims 9.50x16.5, \$65 for both (new cost \$260); '67 Cougar XR-7, \$1250. 257-2848.

1969 Ford van, 302, 3-speed, cust. int., runs good, \$1200. 253-7031 evenings.

Kawasaki KZ400 D3, 1976, like new, 3,000 miles, Proctor Raider 1/4 Fairing-stationary luggage rack. 353-1478.

For Sale: 1963 VW bug, sunroof, new tires. Call 926-4584 evenings.

Wanted: Datsun 510, 4-speed. Preferably '72 or '73, but will take any year in good condition. Call 968-3968.

'76 Honda Sta Wgn. Air, AM/FM Stereo, roof rack, 4-speed, 23K miles. \$3250. 738-4166.

For Sale: Camping trailer; 23 1/2' long, Auto-mate dual axle, fully self-contained (1976), used a few trips only, like new. \$5650. 252-9406.

Chrysler New Yorker Brougham, 1973. Approx. 36,000 mi, fully powered, luxurious. A/C, P/S, AT, power windows, power seats, etc. Tecumseh brake box and class 4 hitch (Reese). Made for trailering (or luxury driving). \$2800. Call 252-9406.

Must sell: Bradly GT, 1975, 21,000 miles, 35 MPG; \$2400 or make offer. Call 967-3202.

1971 Matador Sta Wgn, new rebuilt transmission, clean engine, color: yellow, mag wheels, clean interior, \$850/offer. 739-5373

For Sale: 1961 MGA; has new engine; needs painting and top. \$1,900. Call John at 374-2152 after 6:00.

Miscellaneous

LEARN TO SAIL my Columbia 26 out of beautiful Coyote Point. Lessons Wed. evenings, \$7! Also rental for \$30 - 1/2-day, \$45 - 24 hr, weekend rates. 257-2848.

Mini pool table; 27"x50", excellent condition, all balls and 2 cues; \$10; call 968-4624 afternoons and evenings.

Sofa, lt/gr and gold, original cost over \$1200, asking \$400. Mint condition, call 8 a.m. to 4 p.m. 966-5386, ask for Don; after 5:30 p.m., call 246-9796.

Bikes for sale: Man's 3-spd, \$45; Man's 1-spd, \$40; Man's 10-spd, \$55; Boy's 20" 1-spd, \$40; Girl's 20" 3-spd, \$45; Boy's 20" 3-spd, \$45; Boy's 20" Schwinn, \$55; Boy's 20" 1-spd, \$45; Boy's 20" Motorcross, \$50; Lady's Bike 3-spd, \$45. Phone 296-8594.

Piano: upright, Gulbransen, with bench, a musical instrument of excellent tone, not a piece of furniture. \$650. Call 252-9406.

Typewriter: 18" carriage, good condition, includes stand with folding leaves. Royal. \$60. Call 252-9406 after 5 p.m.

Naugahyde couch, 8-9', \$30. Call 252-9406.

Ansen Sprint mags, two 14x7 w/tires. Fits 5-bolt Chevy, \$40. 253-7031 evenings.

For Sale: Trestle table, two leaves, two benches, dark stained hard pine, \$400. Reclining chair, black, \$50. 378-0214.

For Sale: Collapsible bicycle in good condition. \$55. Call 657-4247 after 6 p.m.

Sublet: Share a two-bedroom apt. in S.F. (near Golden Gate Park) from mid-August to mid-Sept. Modern, furnished; \$175. Call 968-3968.

Needed Bicycle: 2 boys 10-speed, 26-inch, good condition, reasonable. Call Ruthie after 5:00, 736-5285.

For Sale: Telescope mounting and clock drive for lightweight 6-inch or smaller. \$60 or best offer. 941-3397.

For Sale: Zoom lens, Auto-Nikkor 50-300, used twice, half list price! Call 294-1250 after 6:00.

For Sale: Tire chains, 1 pair new, size up to 8.50-14, \$10; 1 pair used, size up to 6.50-14, \$6. 356-2693.

For Sale: Vivitar 35 mm f2.8 lens, OM mount, with lens cap and skylight filter, couple months old. \$60. 226-7940.

For Sale: Girl's Schwinn bike (no speed) in excellent condition. 226-3315.

10-speed bicycles for sale: (1) Huffy, 3 years old, \$50; (2) Motobecane Nomade with Huret Challenger derailleur, 21" boys, blue, barely used, \$130. Call (408)374-6025.

Free dirt. You haul. Call 245-3839 after 5 p.m.

Jean Johnston from Group Dental Plan will be here on Wednesday, August 2, 1978, 12-1:00, Room 147, for anyone who has questions regarding her plan.

Lost Book: Handbook of Thin Film Technology. Publishers: McGraw-Hill Publishing Co. Authors: L. I. Maissner, R. Glang. Please return to Don Moody, 213-7, Building 213, Room 19, X-5462.

Continued on Page 3

The Astrogram

Admin. Mgt. Building. Phone 965-5422

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The Astrogram

VOLUME XX NUMBER 21

August 10, 1978

Postal stamp honors Viking

The Viking missions to Mars was commemorated by the issuance of a special postal stamp Thursday, July 20, the second anniversary of the Viking 1 landing on Mars.

The Viking stamp was designed by Robert T. McCall, well-known space artist, who has designed several other stamps with space themes. Two of his large murals are on display at the National Air and Space Museum in Washington, D.C.

NASA will not have an official cachet for the Viking stamp, but several philatelic organizations and individual collectors will have their own cachets for sale during the day. A special area near the temporary post office will be set aside for these sales.

The two Viking spacecraft were launched toward Mars in August and September 1975. Viking 1's Lander craft touched down on Mars at 8:12 a.m. EDT July 20, 1976, and the Viking 2 Lander reached the planet's surface at 6:59 p.m. EDT, Sept. 3, 1976.

During the primary mission, which ended in November 1976, the Landers and their two partner Orbiter spacecraft conducted experiments in 13 scientific disciplines.

A reduced Viking mission was extended until May 1978 to continue gathering information on Mars' weather, seasonal variations, soil characteristics and other scientific aspects. A further reduced mission will continue through February 1979, controlled from NASA's Jet Propulsion Laboratory in Pasadena, Calif.

More than 30,000 photographs of the planet, from the surface and from orbit, have mapped most of Mars with high-resolution photos and revealed much valuable information to scientists.

Upward Bound program tagged a success

Fourteen Los Angeles teenagers are spending part of their summer studying and working alongside scientists and engineers here at Ames Research Center.

The teenagers, mentally gifted and coming from poor families in the San Gabriel and Pomona Valleys, are participating in a special program exposing them to careers in engineering and science.

The Upward Bound program is directed by Harvey Mudd College, the engineering and science campus of The Claremont Colleges, and is funded by the U.S. Office of Education.

Through the cooperation of the Ames Training and Special Programs Branch, the fourteen students are involved in a multitude of jobs at the space center. One girl, for example, is working in the brain research lab where scientists are mapping the brain in hopes of curing motion sickness.

Two other students have each been given 36 rats and they are conducting tests on what foods and food shapes are best for the future space travelers.

Continued on Page 3

Ames completes land transactions for wind-tunnel modification

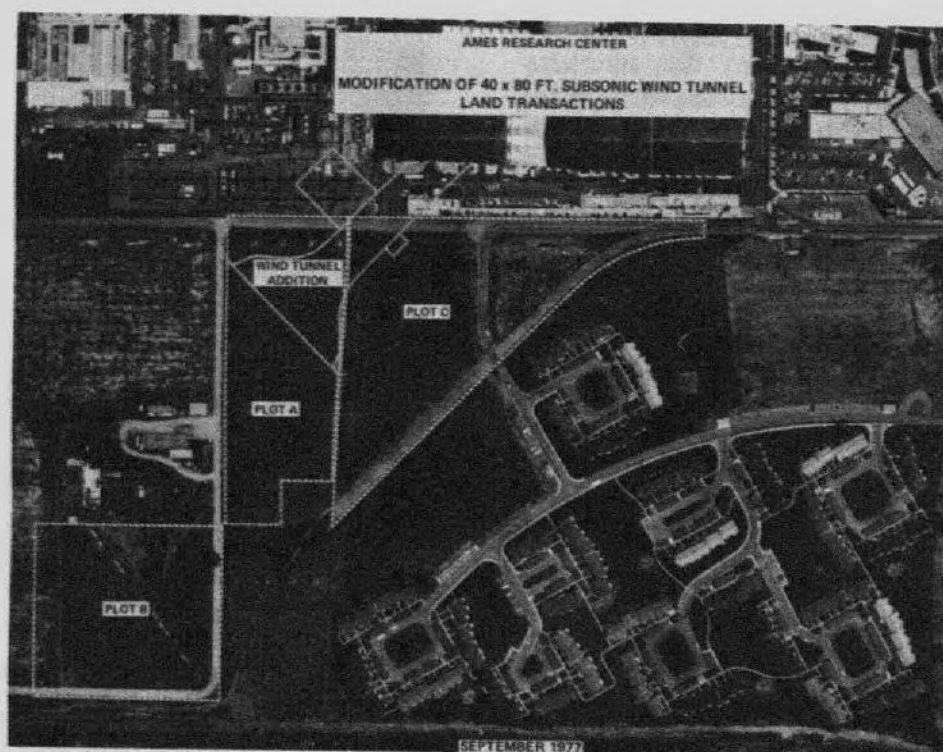
On July 17, 1978, Louis H. Brennwald, Ames' Director of Administration, accepted Custody and Accountability for the Center Director, C. A. Syvertson, of approximately 5 acres of land which are critical to current construction programs.

In order to construct a new test section leg to the 40- by 80-Foot Subsonic Wind Tunnel, some adjustments to the Center's property were required as shown in the accompanying photograph. Plot A is the critical plot of about 5 acres that were required from Pacific Gas and Electric Company (PG&E) at no cost to NASA by exchanging an equal parcel of NASA property, Plot B. This exchange was accomplished through the General Services Administration (GSA) Regional Real Property Division in San Francisco, but required many approvals and reviews in

Washington, D.C. The exchange received a detailed review by the Government Activities and Transportation Subcommittee on Government Operations for the House of Representatives in keeping with current policies involving land exchanges.

Use of Plot C was obtained June 23, 1978 from the U.S. Navy through an agreement with the Naval Facilities Engineering Command, San Bruno, California. This agreement was made possible through the cooperation of the Commanding Officer of NAS Moffett Field, Captain J. M. Quinn, Jr.

Ames' representative in the negotiations for the land was George H. Holdaway, Chief, Facilities Planning Office. Planning and preliminary negotiations for the current land transactions were initiated over four years ago; official action by GSA was requested on January 26, 1977.



White House recognizes first walk on moon

Nine years ago, on July 20, the world paused to watch two brave men tread the surface of the moon. It was a moment without precedent in human experience, a moment when terrestrial life reached out to touch another world. It is a source of pride for us that those men were Americans. Today, the lunar surface is criss-crossed in a half dozen places with the footprints of American astronauts and implanted with a variety of American scientific instruments.

The space shuttle, our next major manned space project, will begin regular, routine economical operation in the early 1980s. Through it, we will use the vantage point of space to learn more about the Earth surface features and processes and to improve

our ability to manage our resources and cope with natural phenomena. We will continue to develop technology to realize the full potential of space communications and other practical applications of space technology.

In the deeper reaches of space, we will continue to seek to expand our knowledge of the solar system and the universe of which we are a part.

As time and technology take us ever more deeply into the space age, it will continue to be our policy to conduct operations in space as required for our national well being and to support the right of all nations to do likewise. In so doing, we remain committed to the underlying principal of the exploration and use of space for peaceful purposes and for the benefit of all mankind.

Tech Utilization awards

Not only does NASA's vast storehouse of technology increase with every new invention, but the inventors themselves reap awards for their innovations. Recently, fifteen Ames employees received a total of \$2,400.00 in monetary awards for inventions and/or innovations reported through the Patent and Technology Utilization Office.

At a ceremony held July 14, C. A. Syvertson, ARC Director, and Charles Kubokawa, Chief, Technology Utilization Office, presented these employees with U.S. Treasury checks and Certificates of Recognition in appreciation for their outstanding contributions.

The following innovators, after initiating Tech Briefs and/or Patents through the Technology Utilization Program, received \$100.00 for each of their items: George L. Shillinger, Jr., received recognition for his "Spring-Operated Accelerator and Constant Force Spring Mechanism Therefor" (ARC-10898). Salvatore R. Riccitiello's award was for a "Fire Protection Covering for Small Diameter Missiles" (ARC-11104). William D. Gunter, Jr., was awarded for his "Schlieren System Employing Antiparallel Reflector in the Forward Direction" (ARC-10971). Theodore Wydeven received awards for "A Reverse Osmosis Membrane of High Urea Rejection Properties" (ARC-10980-1) and for "Electric Discharge for Treatment of Trace Contaminants" (ARC-10975-1). Bruce W. Webbon's award was for his "Spacesuit Torso Closure" (ARC-11100). He also received recognition for his "Tubular Sublimator/Evaporator" (ARC-10912). Hubert C. Vykukal also received an award for the "Spacesuit Torso Closure." Roger A. Craig was awarded for his "Reduction of Nitric Oxide Emissions from a Combustor" (ARC-10814-1). Robert W. Rosser gained recognition for his "Preparation of Heterocyclic Block Copolymers from Perfluoroalkylene Oxide 'a,' 'w'-Diamidoximes" (ARC-11060). Paul M. Sawko was awarded for his "Fire Protection Covering for Small Diameter Missiles." Gilbert K. Kojima invented "A Miniature Implantable Ultrasonic Echonometer" (ARC-11035). Patricia A. Brown's awards were for "Indomethacin-Antihistamine Combination for Gastric Ulceration Control" (ARC-11118) and "Aspirin/Metiamide Composition" (ARC-11038-1). Catherine C. Johnson was awarded for her "Reverse Osmosis Membrane of High Urea Rejection Properties." Bill A. Williams received an award for the "Liquid Cooled Brassiere" (ARC-11007-1). Robert H. Stroub's award was for "A Constant Lift Rotor for a Heavier than Air Craft" (ARC-11045-1). And Fred R. Lemos was awarded for his "Metallic Hot Wire Anemometer and Method for Fabricating Same" (ARC-10911).

Theodore Wydeven also received a minimum award of \$100.00 for his "Oxygen Post-Treatment of Plastic Surfaces Coated with Plasma Polymerized Silicon" (ARC-10915-2), plus a minimal award of \$100.00 for his "Abrasion Resistant Coating for Plastic Surfaces" (ARC-10915-3).

Although not present at the ceremony, Wendell D. Chase will receive \$200.00 for his "Full Color Hybrid Display for Aircraft Simulators" (ARC-10903). Joan Vernikos-Danellis will also receive \$200.00 for her "Indomethacin-Antihistamine Combination for Gastric Ulceration Control" and "Aspirin/Metiamide Composition."

All NASA and NASA contractor employees engaged in aeronautical or space research and development work are eligible for cash awards when they report new ideas to NASA. Innovations do not necessarily need to be technical in nature but can include any item which has merit or utility, including computer programs.

To become eligible, an idea must be submitted through one of several channels for consideration by the NASA Inventions and Contributions Board (ICB). NASA employees should contact either the Ames Technology Utilization Office (TUO) or the

Patent Counsel. Consideration will be given by these offices to further processing of New Technology reports for TU publication such as a Tech Brief or for patent application, or both.

Contractor employees should first contact their company's New Technology Representative or Contract Monitor. These individuals will initiate the necessary steps whereby reports of new technology are submitted to NASA.

Each month the ICB convenes to consider items proposed by NASA patent and TU representatives. The board determines the dollar amount to be awarded based on the new technology's relative value and its impact on the conduct of space activities. The minimal award is fifty dollars (\$50.00) when a Tech Brief is published or one hundred dollars (\$100.00) when a Patent Application is filed for an innovation reported to the TUO and/or the Patent Counsel.

The board also gives special consideration to those items which are a significant scientific and technical contribution and/or transferred and used in the private or public sector. This award can range from a minimum of \$250 to several thousands of dollars. Before any item receives the higher award it undergoes extensive study and evaluation. The Awards Evaluation Questionnaire, originated through the TUO to the innovator's management, is an important part of this process. The questionnaire

should be carefully prepared to assure that significant innovations are recognized and proper justifications prepared for consideration by the Board.

Assistance in reporting and preparing innovations for publication can be secured by contacting the TUO, Ext. 5333.

"Thank you"

To all of my friends at Ames:

Connie and I would like to thank you very much for the outstanding luncheon and delightful gifts you gave us on our departure from Ames.

You should know from me, I think, that our decision to leave came about only after a great deal of trepidation. My (almost) six years as Chief of the Health and Safety Office were very rewarding both professionally and personally. I learned years ago that each new job or situation presents new problems and joy. Needless to say, I am probably a better person after having been permitted to serve as Chief of Health and Safety and Institutional Operations.

My new tennis racket is superb. The only problem I have now is that I have become very paranoid. Every tennis player on the court wants my racket!

Thank you again for everything.

With warmest regards,
Lewis Hughes

RSRA flies as a compound aircraft



The Army-NASA-Sikorsky Rotor Systems Research Aircraft RSRA, made its first flight as a compound helicopter-fixed wing aircraft taking off from Wallops Island on April 10 from a runway and climbing 1500 ft using both wings and rotor systems for lift.

Under contract to the U.S. Army Research and Technology Laboratories AVRADCOM here at Moffett Field and NASA, Sikorsky Aircraft Div., United Technologies has built two RSRA types which will be flight tested by the company for about 80 hours this year before being turned over to the Army Research and Technology Laboratories and NASA Ames Research Center.

Powered by two auxiliary TF34 turbofan engines mounted below the rotor system, the RSRA is equipped with a 45-foot wing and a five-blade S-61 rotor system powered by two T-58 turboshaft engines.

The flight was made by the No. 1 RSRA, which earlier recorded the first flight of a fully qualified helicopter emergency escape system (Nov. 19, 1977). The emergency escape system provides for severance of the main rotor blades, separation and fragmentation of the canopies, and sequenced upward extraction of the crew using tractor rocket motors.

The No. 2 aircraft, also undergoing tests at Wallops, is equipped with a unique rotor vibration isolation system that provides wideband attenuation of vibrations to the fuselage from the main rotor. This feature allows for the installation of different rotors on the RSRA without modification to the fuselage.

The Army and NASA awarded a \$25 million contract to Sikorsky in January, 1974 to build two RSRA test vehicles.

Stern first

(Reprinted from "Hilltopics," Washington State Univ. Alumni paper)

Stern first is the way to travel, aerodynamically speaking.

Mechanical engineering students at Washington State University have settled a long-standing, high-level academic debate over which is the best way to carry a rowboat atop a station wagon.

The debate was between two WSU engineering faculty, Richard Tinder, electrical engineering, and Clayton Crowe, mechanical engineering.

Tinder, an avid fisherman, always mounted his rowboat in the traditional way, upside down with the bow pointing forward.

Not right, said Prof. Crowe.

He contended that principles of aerodynamics prove there would be less drag if the stern faced the direction of travel and the bow pointed to the rear.

Better gas mileage would result, Crowe said.

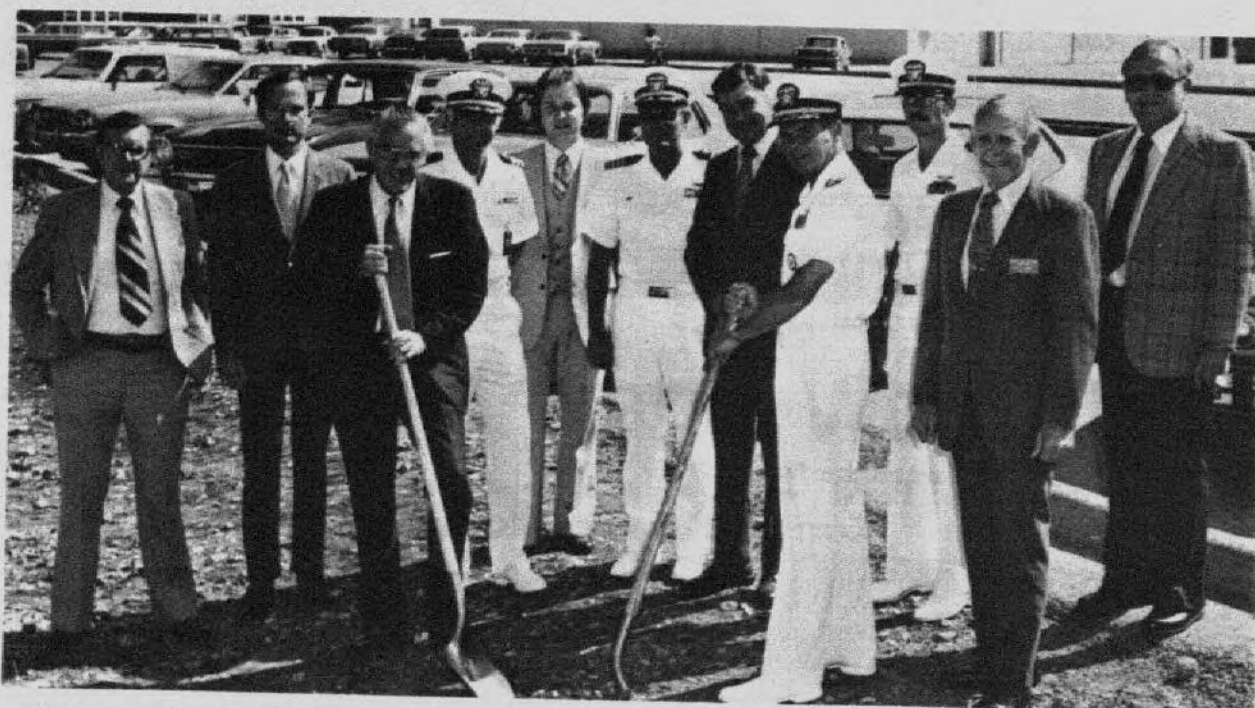
Tinder disagreed.

Another mechanical engineering professor, David Stock, told one of his classes about this disagreement, and suggested that a couple of interested students resolve the argument for credit. Robert Howe and Kenneth Squires took on the project. They built scale models of Dr. Tinder's station wagon and rowboat. Using the large wind tunnel at WSU, they performed tests with the boat in both positions.

Squires and Howe found that at approximately 50 miles per hour, the station wagon would get 11.8 miles per gallon with the boat mounted in the traditional way. However, with the boat mounted backwards the car got 12.2 miles per gallon.

The two students concluded that Dr. Crowe was, indeed, correct. It is more aerodynamically efficient to mount a boat with the bow at the rear. Therefore, a small savings of gas can be realized by abandoning the traditional methods.

Ground-breaking for new Credit Union



A long awaited Credit Union facility became a reality recently with a traditional ground-breaking ceremony.

Teaming up to turn the first spade of ground were John Pogue, ARC; and Radm C.O. Prindle, USN. Witnessing the event were members of the Board of Directors: E. Seward, NAVPRO; R. Melugin, ARC; LCDR R. Zafrin, USN; and E. Long, ARC. Guests

included Captain J. Quinn, Jr., NAS CO; CDR Eagye, NAVPRO; Louis Brennwald, ARC; H. Hunter, Manager of MCU; and F. Emmert of Emmert and Associates, the contracting firm.

The new building will be completed in mid-September and will provide more than 5000 feet of floor space.

Training applications due

Ames employees interested in attending classes during the 1978-79 academic year, under Ames sponsorship, should submit their training applications, ARC 301, so they reach the Training Office by August 23, 1978. Approved training applications are required for attendance at Stanford University, University of Santa Clara, Golden Gate University, College of Notre Dame, and all community colleges.

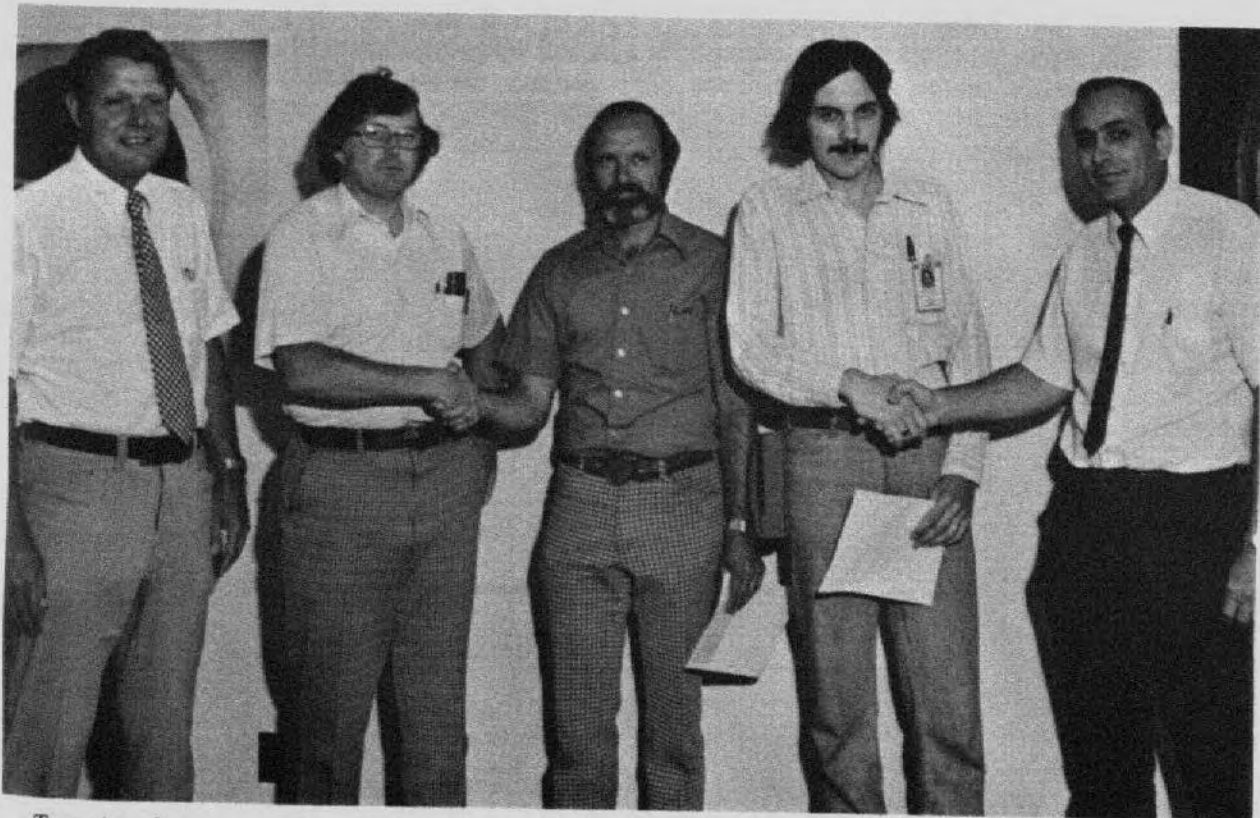
Stamp Club

The ARC Stamp Club will hold its first organizational meeting on Wednesday, August 16, at 11:45 a.m. in the private dining room of the Ames cafeteria.

The agenda will include a discussion of future meeting times, dates, and possible formats. If there are any questions or suggestions, please forward them to mail stop 241-15.

Help is needed to get the club off to a good start, so all members are urged to invite prospective members to attend.

Special Achievement Awards



Two Aerodynamics Division employees receive Special Achievement Awards for Sustained Superior Performance. Pictured left to right are Richard H. Petersen, Chief, Aerodynamics Division; Gary T. Chapman, Acting Chief, Aerodynamic Research Branch; Gerald N. Malcolm, Recipient of award, Aerodynamic Research Branch; Joe M. Lestardo, Recipient of award, Experimental Investigations Branch; and John W. Davis, Chief, Experimental Investigations Branch. These awards were presented on June 13, 1978.

Upward Bound

Continued from Page 1

Another student is assisting engineers in the redesign of cockpit control panels and several others are involved in construction of a sensing device for electro-magnetic fields and a machine which reads infrared rays.

The students spend half the day on the job at Ames and the rest of the day and evening in classes taught by Upward Bound staff, college and high school teachers, hired for the summer. The classes are accelerated courses in math, English, and the sciences.

Upward Bound programs are taking place at colleges across the nation, but Harvey Mudd's program is unique. The standard program, usually operated by a liberal arts college, brings disadvantaged students to a college campus for a six-week period of accelerated, on-campus study. The Harvey Mudd plan is to directly involve the students in the sciences, allowing them to work at cooperating scientific centers throughout the state. Program coordinator at Ames is Marcia Kadota of the Ames Training Branch.

The story is highly visual and the people involved are extremely verbal about the program. Good sources are the kids in the program, John Leveen, Chief of Training at Special Programs and the person responsible for the program being there, and Phil McCartney, Upward Bound coordinator for the NASA-Ames site. The program is using a dormitory at San Jose State University as home base.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
78-137	Modelmaker	WG-14	RSC	Centerwide and Army	8-28-78
78-140	Contract Specialist	GS-5/7	ASA	Centerwide and outside	8-18-78
78-141	Supvy AST Technical Resources Management Asst Chief, Tech App Br	GS-13/14	SEA	NASA-wide	9-1-78
78-142	Aerospace Eng AST, Flight Systems	GS-12/13	FOA	NASA and outside	9-1-78
78-143	Secretary (Typing) or (Steno)	GS-4/5	STP	Centerwide and outside	8-28-78
78-144	Secretary (Steno)	GS-4/5	SEP	Centerwide and outside	8-28-78

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
78-91	Secretary (Stenography), GS-4/5	LMS	Cancelled
78-125	Secretary (Typing)	FOS	Shoaf, Terry
78-126	Secretary (Stenography), GS-4/5	LM	Cancelled
78-130	Secretary (Stenography)	F	Bradford, Brenda

Want ads

Transportation

For Sale: 1973 Pontiac Lemans, 4-spd, PS, PB, CB, AM & FM, Air, Vinyl top, 969-7280 after 4:15 p.m.

'74 Mustang, automatic, 2300 CC engine, steel-belted radial tires with less than 5000 mi, exc. cond., \$2495. Call 258-6965, Monday through Friday.

'63 Buick Wildcat, \$400. Call evenings 255-5055.

For Sale: 1976 Dodge Mobile Traveler. Sleeps 6, refrig., heater, stove, oven, 18½ ft, 27,000 mi, air cond., toilet-shower, water heater, cruise control. \$8800. 264-3140.

For Sale: Ford 1967 Custom 4-door sedan, 289 engine, AT PS, new tires. One owner, Asking \$500. Good condition. Call 296-5993.

For Sale: 48,000 mi, original owner; baby blue 1976 Pontiac Catalina, 2-dr hardtop, A/T, P/S, deluxe radio. Immaculate interior, exc. exterior and mechanical condition. 593-3311 after 5 p.m.

For Sale: 1972 Ford LTD 4-dr, AC, new brakes, two new radials. 67,700 mi, original owner. Well maintained, mint cond. inside and out. \$1375/best offer. Call 968-3968 or 328-5736.

Housing

Room for Rent: Mountain View, employed man some home privileges. 968-2410.

For Rent: Quiet Cupertino foothills, Ward-Crump home, 3 bdrms, 2 bth, AEK, refrigerator, washer/dryer, large living room with fireplace, garden maintenance. Available from September, \$495/month. Call 257-8195 eves.

For Rent: Cupertino, 2 bdrm, 1½ bth, 2-car garage, fireplace, near shopping, clean, quiet neighborhood. \$375/month. Call 253-5486 or 421-1980.

20 min to Ames, lge 3-bdrm, 2-ba, neighbors to a golf course. Beautifully landscaped with garden. Excellent buy! \$73,500. Call 796-8728.

Miscellaneous

Good first sailboat, 13 ft Chrysler Lone Star, main and jib, life jackets, etc., trailer, berthed at Vasona, \$600, call 253-6294.

Enlarger prinze deluxe 50-75mm lens, color pc filters, misc extras, \$75. After 6, 948-9399.

For Sale: Hanging basket chair, never used, \$50. 941-3397.

Five Jaguar 16" wire wheels, \$300; XK140 rear end, \$250; 1½ year old African gray parrot with cage, \$350. 245-8746 or 744-1094.

Open house and sale, August 12, 13, and 19, 20, 9 a.m. to 6 p.m. Houseful of Sloane and other furniture, original paintings, mirror, artifacts, antiques, air conditioner, TV sets, etc. Come early and place your bid. 21545 Monrovia St., Cupertino, or call 257-8195 for directions.

For Sale: 12 ft Alu. boat, anchor, oars, life preservers and cushions, and like-new 7 hp motor and trailer. All \$395. Phone (408)578-5472, evenings.

Brittany Spaniel, male, 3 yr old, beautiful markings, smart, housetrained. Free to good home - adults. Call 248-4690.

For Sale: T-6/P-51 Club Membership, \$2000, \$25/hr for T-6, \$50/hr for P-51, based San Jose, 948-9301.

10 ft Whip antenna and bumper mount with heavy duty coax cable, \$30. CB power supply, \$20. Call 258-6965 Monday through Friday.

Aquarium set: 20 gal tank, 15 gal tank, wrought iron stand, pumps, gravel, heaters, etc., \$50 for all. Call 258-6965 Monday through Friday.

MISPLACED: Ampex FR-1800 recorder-reproducer. Ames decal No. 31688. S/N 7260200. Call 5142.

¼ share in a Coronado 25 fiberglass sailboat fully equipped for ocean and Bay sailing. Call Bill at 245-2881 after 7 p.m. \$1900.

S.F. Opera tickets - Jerry Smith Specials. Best seats in house - 5th row center, orchestra. Tickets available for Norma, Billy Budd, Werther, Lohengrin, and Don Giovanni. Call Jerry at 961-5993 or Bill at 326-7925.

"PRINCE" needs a good home. He is a 3-yr-old St. Bernard who cannot move to the desert with his master. Call Judy, 961-2093/p.m.

For Sale: 14' Scotsman Trailer, sleeps 5, 2 tanks, exc. cond., \$950/offer. Call 326-9839 after 5.

FREE: Five kittens, 3 male, 2 female, two months old. To good home. Call 296-5171 and ask for Mrs. Pereira.

For Sale: SB102 ham transceiver with power supply and SWR meter. \$250. 969-9273.

Need bowler for Ames League - call Shirley Hayes at X 6288, or Jack Cayot at X 5052.

Sailboat: Pelican class; 12 ft hull, designed for S.F. Bay sailing; beautifully handcrafted and rigged for racing with active bay-area fleet; on Sears trailer. \$1000. Phone 732-7384.

Wanted: Small two-wheel bike for five-year-old learner. 735-9134 eves.

Bird cage, \$10; 2 Gran Torino sport hubcaps, \$25; ping pong table (homemade), \$15; 4 15-inch Ford rims (7 inch wide-stock), \$20. 249-3890 evenings.

Cute kittens desperately need loving good home, one grey, one black. 293-8574.

Loving dog: Lab-husky, free to good home only, 293-8574.

Bowling

The winter bowling season is drawing near. All bowlers interested in bowling in the Ames Mixed Fives Bowling League call Wayne Harry at ext. 5974. The league will bowl at Moonlite Lanes on Thursday nights starting at 6:15 p.m. The first night of bowling will be Sept. 7, 1978. You may submit individuals or full teams, it will be on a first come, first place basis.

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The Astrogram

VOLUME XX NUMBER 22

August 24, 1978

978

Astronaut candidates learn survival techniques

Sixteen astronaut candidates from Johnson Space Center are scheduled to spend three days in training at the Homestead Air Force Water Survival School in Florida, beginning July 31.

Most of the 35 astronaut candidates had the water survival training before entering the NASA program. Included among the 16 who will take the training are the six female astronaut candidates.

Each day's activities during the course will include classroom lectures on water survival techniques plus actual training in the water environment. Briefings on procedures will precede each activity.

The training includes jumping from a tower wearing a tethered parachute harness while sliding down a wire to a landing in the water. The candidates will also be towed through the water in a parachute harness, simulating a parachute dragging one across the surface and having to release one's self.

Other exercises will require astronaut candidates to be towed aloft under a parasail canopy, land in the water and be picked up by a boat. On the final plunge into the water suspended from the parasail, astronaut candidates will be coming down with full survival gear. A helicopter will pick them up from their life raft.

Hispanic Heritage Week begins September 11

Approximately 5.3% of the total U.S. population are Hispanic Americans. For more than two centuries, men and women of Hispanic origin have contributed their talents and energies to the development of our Nation. In 1968, Congress passed a resolution calling upon the President to issue annual proclamations setting aside a week to focus attention on the achievements and aspirations of our Hispanic citizens.

This year Ames will be observing National Hispanic Heritage Week September 11 through 15. Ames Research Center and Navy Offices at Moffett Field and Lockheed Missiles & Space Company have joined together in planning activities for this week.

The week is slated to have a series of lecturers, authentic Hispanic menus at the on-site cafeterias and clubs, and a Happy Hour with Mariachi performers. These activities will provide an opportunity for those of us at the Center to remind ourselves of the many Hispanics who contribute to our country's history, technology, and culture.

Santiago Rodriguez, Office of the Commonwealth of Puerto Rico, will kick off the week's activities on Monday, September 11. Mr. Rodriguez was formerly the Assistant Director, Office of the Spanish Speaking Program, U.S. Civil Service Commission. He will speak to us about the Hispanic Employment Program and how we can work together to accomplish its goals. He will also discuss why Hispanic Heritage Week is important.



A graduate of the District of Columbia public school system, Mr. Rodriguez majored in political science at the college level and received his B.A. from the American University and the M.A. from the University of Virginia where he is currently a doctoral candidate. He has received awards from a number of civic and professional organizations.

On Tuesday, September 12, Lt. Glenn N. Gonzalez will be the featured speaker. His talk will cover differences between the military and Civilian Justice Systems. A graduate of the University of Texas with a Bachelor of Arts in Political Science, Lt. Gonzalez also received his Jurist Doctor Specialty in Criminal Law from Southern Methodist University.

Our own Dr. Henry A. Leon will be our featured speaker on September 14. Dr. Leon will discuss blood changes in rats during space flight.

Dr. Leon received the B.A. and Ph.D. degrees from the University of California, Berkeley. His Ph.D. dissertation was concerned with the mechanism by which helium environments increase the metabolism of small animals.

In 1960-61 he served as Fellow for the National Cancer Institute at the Wenner Grens Institute, Stockholm, Sweden, where he worked on the hormonal control of protein synthesis. In 1961-62 he had a dual appointment as a staff member of the Pathology Department, Massachusetts General Hospital, Boston, and a Milton Research Fellow in Pathology, Harvard Medical School, Cambridge, Massachusetts. Dr. Leon has worked at Ames as a Research Scientist since 1962. His published works included studies of helium environments, oxygen toxicity, hormonal control of protein synthesis, and hormonal control of protein synthesis during stress. Recently he has flown experiments aboard the Russian Biosatellites Kosmos 782 (1975) and 936 (1977).

The three speakers will present their talks in NASA's Main Auditorium, Building 201 on September 11, 12, and 14 from 9:30 a.m. to 11:00 a.m.

Official QSRA delivery takes place



NASA officially took delivery Thursday, August 3rd, of the NASA/Boeing Quiet Short-Haul Research Aircraft (QSRA) at fly-away ceremonies at Boeing Field.

Pictured left to right are Donald E. Cumming, Boeing QSRA Test Manager; Jim Martin, NASA/Ames Project Pilot; John Cochrane, Ames Project Manager; Bob McCracken, Ames Resident Manager; Bob Innis, Ames pilot; and George S. Kelley, Boeing QSRA Program Manager.

Second Spacelab science crew named

Four American scientists have been named by NASA to serve as Payload Specialists during the second Spacelab mission scheduled for 1981.

The scientists selected are:

- Dr. Loren W. Acton of Palo Alto, a research scientist at the Lockheed Palo Alto Research Laboratory.
- Dr. John-David F. Bartoe of Reston, Va., a research physicist at the U.S. Naval Research Laboratory, Washington, D.C.
- Dr. Dianne K. Prinz of Alexandria, Va., a research physicist at the U.S. Naval Research Laboratory, Washington, D.C.
- Dr. George W. Simon of Alamogordo, N.M., chief of the solar research branch at the Air Force Geophysics Laboratory with permanent duty location at the Sacramento Peak Observatory, Sunspot, N.M.

Prior to the flight, two of these scientists will be selected to actually fly aboard the orbiting space laboratory and operate the scientific investigations planned for the mission. The other two will operate ground-based experiment equipment and assist the pair in orbit.

The Payload Specialists were selected by the Spacelab Investigators Working Group (IWG), which is composed of the Spacelab 2 Principal Investigators, who will have experiments aboard the mission. Each Payload Specialist is a Co-Investigator on one of the experiments to be flown aboard Spacelab 2.

The position of Payload Specialist is a new one in the space program. Payload Specialists are not professional astronauts and are not required to pilot or operate the Space Shuttle, which will carry the Spacelab on its missions. They will, instead, devote themselves to the operation of experiments just as a scientist would do in a ground-based laboratory except that their laboratory, Spacelab, is in orbit.

Payload Specialists were named in June for the first Spacelab mission, scheduled for launch late in 1980.

The Spacelab 2 Payload, managed by NASA's Office of Space Science, consists of scientific investigations primarily in the areas of astronomy, high energy astrophysics and solar physics research. Experiments also will be performed in plasma physics, botany, medicine and space technology.

Spacelab 2 is a Spacelab "pallet only" mission with the scientific instruments exposed to space in the cargo bay of the Space Shuttle Orbiter. Because there is no habitable module included in this configuration, the Payload Specialists will operate their experiment equipment from the Shuttle Orbiter's crew cabin. The mission is scheduled to be launched from Kennedy Space Center in 1981 and will orbit the Earth at an altitude of about 450 kilometers (250 miles) for nine days.

XEROX 2400 moved

The XEROX 2400, previously located in the Life Sciences Library, has been moved to the 4th floor of the Life Sciences Building 239. Any questions regarding the use of this machine should be directed to Ext. 5760.

A Savin copier is now available in the Life Sciences Library. This machine will be for copying library materials only and compliance with the copyright law is required.

Model jet engine used in tunnel studies

Ames, in cooperation with private industry, is using an air-powered miniature jet engine simulator in aerodynamic tests in its 3.3-by 3.3-m (11-by 11-ft) Transonic Wind Tunnel. This is the first time this type of test apparatus has been used at the Center.

The engine, which simulates an actual jet engine's performance, was developed and built by Tech Development Inc. of Dayton, Ohio and is owned by McDonnell Douglas Aircraft Corporation. It is being used in a major program to develop more economical jet transport aircraft.

Before this type of engine simulator was developed it was extremely difficult to test jet aircraft models for aerodynamic drag associated with the propulsion system. Its primary task is to simulate the effects of propulsion interference that exist at flight conditions for a NASA/McDonnell Douglas project which is part of the Aircraft Energy Efficiency (ACEE) program being conducted by NASA and various industries.

Langley Research Center and McDonnell Douglas are investigating ways of designing airliners and other aircraft to operate more economically. One way to do that is to reduce the drag that affects the aircraft as it flies through the air. This is the type of research in which the jet engine simulator will be used and the first tests of this system at Ames are currently in progress.

The simulator, which resembles a miniature engine, is powered by a high pressure air supply that spins the model's turbine at speeds up to 85,000 rpm. It is about 10 cm (four inches) in diameter and 15 cm (six inches) long.

Because it behaves like an actual jet engine, it accurately duplicates the air flow around and through an aircraft's jet engines and their supporting structures in flight.

The nacelles and pylons, which are the structures that surround and hold the engine to the wing, are designed to facilitate air entry and exit through the engine. However, they are a cause of aerodynamic drag. This new equipment will enable engineers to determine causes of drag more accurately than before.

Since the engine operates at high speeds, the bearings that hold the turbine in place are carefully monitored. These bearings are conventional ball type and are lubricated by an oily wick. If they reach a temperature of 150° C (300° F), the jet simulator will shut down.

In its first application, the engine is being used to test a technologically advanced wing system that is being researched by NASA and McDonnell Douglas. In future tests, the engine will be mounted on various nacelle/pylon/wing assemblies for wind-tunnel testing.

It is anticipated that this technique will play a major role in the development of future V/STOL aircraft as well as conventional transports.

Air-powered jet engine shown in tunnel



An air-powered jet engine simulator is shown in the Ames 3.3-by 3.3-m (11-by 11-ft) Transonic Wind Tunnel with Betty Wong of Experimental Investigations Branch. The engine can produce up to 440 newton (100 lb) thrust and operate at speeds of up to 85,000 rpm.

Attention Vets

All veterans interested in attending college have up to 10 years from the date of separation to complete their education. DeAnza College's Office of Veterans Affairs (OVA) offers a wide variety of services to its veterans and their dependents. Some of the areas in which they can assist you include free tutoring, career counseling, VA work-study on-the-job learning experiences for college credit, job placement, financial aid, and discharge upgrading referral.

The OVA will assist ALL veterans and their dependents regarding home loans, medical, dental, and disability benefits. For further information call the OVA at 996-4595 or 996-4597 between 8 a.m. and 9 p.m., except Fridays when the office closes at 4:30 p.m.

A representative will be at Ames in the Cafeteria on Wednesday, August 30, from 11 a.m. to 1 p.m., to answer any questions.

NASA/Ames Research Center

CALENDAR OF EVENTS

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

PREPARED BY:
VISITS COORDINATOR
965-5546 M.S. 253-1

SEPT 4 -	SEPT 5 - Space Science Div/Astrophysics Seminar Series Speaker: Dr. Guy Guelachvili, Universite de Paris-Sud 91405 Orsay, France Topic: "Doppler Limited Molecular Infrared Laboratory Spectroscopy: Species of Planetary and Astro- Physical Interest" Time: 10:30 a.m. Location: N-245 Auditorium	SEPT 6 -	SEPT 7 -	SEPT 8 -
SEPT 11 - Hispanic Heritage Week Lecture Speaker: Santiago Rodriguez, Office of the Commonwealth of Puerto Rico Topic: "The Hispanic Employment Program - Unidos Venceremos" Time: 9:30 - 11:00 a.m. Location: N-201 Main Auditorium	SEPT 12 - Hispanic Heritage Week Lecture Speaker: Lt. Glenn Gonzalez, NAS Legal Office Topic: "Military Justice System versus Civil Justice System" Time: 9:30 - 11:00 a.m. Location: N-201 Main Auditorium	SEPT 13 -	SEPT 14 - Hispanic Heritage Week Lecture Speaker: Dr. Henry A. Leon, Research Scientist, Ames Research Center Topic: "Blood Changes in Rats During Space Flight" Time: 9:30 - 11:00 a.m. Location: N-201 Main Auditorium	SEPT 15 - ARA Happy Hour!!! Hispanic Hors D'Oeuvres and Mariachi Band Time: 4:30 - 6:30 p.m. Location: N-235 Ames Cafeteria
SEPT 18 - Computational Fluid Dynamics Branch Seminar Speaker: Prof. Kyuichiro Washizu, Dept. of Aeronautics, Univ. of Tokyo, Tokyo, Japan Topic: Application of the Finite Ele- ment Method to Some Aerodynamics Problems. 1. Potential Flow About a Wing-Body Combination 2. Lifting Surface Problem Time: 10:00 a.m. Location: N-233 Room 227	SEPT 19 -	SEPT 20 -	SEPT 21 -	SEPT 22 - If you wish to have an event announced on this calendar please notify Linda Mackey, Visits Coordinator, Ext. 5546, Mail Stop 253-1. She must receive the information by Wednesday between publication dates in order to meet the deadline.

WEEKEND ACTIVITIES:

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

AMES RESEARCH CENTER

September 5, 1978 thru September 8, 1978

A LA CARTE MENU

TUESDAY	Baked Pork Chops Creole Style.....	1.45
	Noodles Supreme.....	1.30
	Choice of One: Snowflaked Potatoes or Rice Savory Style Beans or Corn O'Brien or Salad	
	Soup - Cream of Chicken.....	.30 & .45
WEDNESDAY	Beef Potato Pie with Biscuit Topping.....	1.45
	Baked Spaghetti and Meat Sauce.....	1.30
	Choice of One: Whipped Potatoes or Scalloped Potatoes, Peas, Beets or Salad	
	Soup - Fresh Vegetable and Beef Broth.....	.30 & .45
THURSDAY	Chicken Fricassee over Rice.....	1.45
	Boston Baked Beans and Dinner Franks.....	1.30
	Choice of One: Mashed Potatoes or Rice or Buttered Spinach or Carrots or Salad	
	Soup - Macaroni, Onions and Tomato.....	.30 & .45
FRIDAY	Ham Steak Hawaiian Style.....	1.45
	Tuna Casserole.....	1.30
	Choice of One: Snowflaked Potatoes, Candied Yams, Broccoli, Corn or Salad	
	Soup - Fulton's Market Clam Chowder.....	.30 & .45

NOTE: Next week special menu - HISPANIC HERITAGE WEEK - Mon. thru Fri.

DAILY SPECIALS	INCLUDES: A \$1.55 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	1.80
	(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP.....	1.10
	DAILY DIET SPECIAL	
	(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

	HOF BRAU MENU (Sandwich with Choice of French Roll or Bread)	
DAILY	Rare Roast Beef, Pastrami, or Corned Beef.....	1.65
TUESDAYS	Ham.....	1.65
THURSDAYS	Turkey.....	1.65
	Sausage Sandwich on French Roll.....	1.05

	AN ASSORTMENT OF SALADS, INCLUDING SHRIMP LOUIE.....	1.60
	AND CHEF'S SALAD (are available).....	1.45

HISPANIC HERITAGE WEEK

September 11, 1978 thru September 15, 1978

MONDAY	Soup: Gazapho - Tortilla Chips Entree: Chorizo & Yellow Rice & Chili Beans Dessert: Roscas A La Natillas	
TUESDAY	Soup: Gazapho - Tortilla Chips Entree: Chiles Rellenos Con Queso Hechos May Pronto Dessert: Budin De Chocolate A La Espanola con Sherry Sauce	
WEDNESDAY	Soup: Menudo or Gazapho - Tortilla Chips Vegetable: Espinaca con Pimento Entree: Beef Enchiladas & Beans Dessert: Roscas A La Natillas	
THURSDAY	Soup: Gazapho or Menudo - Tortilla Chips Entree: Carne de Puerco con Chile Verde Dessert: Budin De Chocolate A La Espanola	
FRIDAY	Soup: Gazapho or Menudo - Tortilla Chips Entree: Tamale Pie or Fish Casserole Dessert: Budin De Chocolate A La Espanola con Sherry Sauce or Roscas A La Natillas	

***** REGULAR MENU ALSO *****

DAILY SPECIALS	INCLUDES: A \$1.55 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	1.80
	(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP.....	1.10
	DAILY DIET SPECIAL	
	(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

	HOF BRAU MENU (Sandwich with Choice of French Roll or Bread)	
DAILY	Rare Roast Beef, Pastrami, or Corned Beef.....	1.65
TUESDAYS	Ham.....	1.65
THURSDAYS	Turkey.....	1.65
	Sausage Sandwich on French Roll.....	1.05

	AN ASSORTMENT OF SALADS, INCLUDING SHRIMP LOUIE.....	1.60
	AND CHEF'S SALAD (are available).....	1.45

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Space Administration

Ames Research Center
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NASA-451



NASA

Pioneer Venus 2 completes first course change

Mission controllers have completed a critical course maneuver for the Pioneer Venus 2 Multi-probe spacecraft, designed to probe Venus' dense atmosphere and cloud layers.

Spacecraft controllers here at Ames report they have apparently succeeded in maneuvering the spacecraft onto a trajectory that will put it right on target for encounter with Venus Dec. 9, 1978. Without the course adjustment, Pioneer Venus 2 would have passed by Venus about 14,500 km — 9,000 mi — from the planet's surface.

The course correction comprised a day long procedure which featured a series of timed rocket thrusts in two directions in space, increasing the spacecraft's speed by 2.25 meters per second (about five mph). Launched Tuesday, August 8, 1978, Pioneer Venus 2 is presently speeding away from Earth at 10,400 kmph (6500 mph). As of 5 p.m. PST Wednesday, August 16, Pioneer Venus 2 was 2,335,000 km (1,460,000 mi) from Earth. This course correction was so successful that controllers report a second correction, originally planned for next week, may not be necessary.

Pioneer Venus 2 will split into five atmosphere entry craft — four probes and the transporter bus — starting 24 days out from Venus. On December 9, 1978, at approximately 11 a.m. PST the four probes

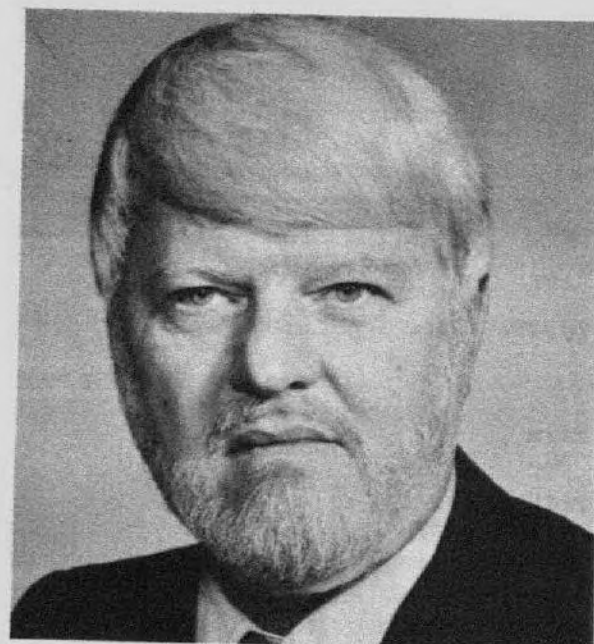
will begin their descent through the planet's dense atmosphere, while the transporter Bus will burn up in the upper atmosphere, after making the mission's only composition measurements of the planet's upper atmosphere. The four probes are not expected to survive on the surface but may relay data about the planet's surface for a short period after impact.

With Pioneer Venus 2 exactly on schedule, the probes will descend to the planet's surface as the Earth's rotation brings three NASA tracking stations in the Pacific pointing directly at Venus. As the probes descend, their paths are expected to be buffeted by winds. Scientists will be able to calculate the wind speeds on Venus as they get a three dimensional "fix" on the constantly changing paths of the falling probes.

The flight to Earth's nearest neighbor will cover 354 million km (220 million mi). The spacecraft will journey two-fifths of the way around the Sun as it crosses the 26 million miles between the orbits of Earth and Venus.

The combined missions of the six Pioneer Venus spacecraft are the first designed primarily to study the atmosphere and weather of another planet on a global scale. Information gathered at Venus may help us learn more about the forces that drive the weather on Earth.

Chappell honored by A.H.S.



David P. Chappell, Aerospace Engineer, Aeromechanics Lab, U.S. Army Research & Technology Laboratories RTL AVRADCOM, won the American Helicopter Society's annual Robert L. Lichten Award for his paper entitled "Monitoring of Fatigue Loading on Prop-Rotor Systems and Related Components during Tests of the XV-15 Tilt Rotor Research Aircraft."

The Lichten Award is given to the author of the best technical paper presented during the preceding calendar year. It is based on the author's personal contribution, originality of the work, and technical content. Chappell is assigned to the Army-NASA Tilt Rotor Research Aircraft Project as a specialist in Rotary Wing Structures.

The award presentation took place in May during the 34th Annual Forum of the American Helicopter Society at the Sheraton Park Hotel, Washington, D.C.

Nice going, Tom!

Friends and acquaintances of Major Tom Almojuela will be interested in knowing that during Tom's last week in this area he won two important golf championships. In Canada, he came from six strokes behind to win the North American Indian Medal play championship (he was defending champ). He then came back to win the match play championship of Moffett Field.

Tom recently transferred to Fort Leavenworth, Kansas.

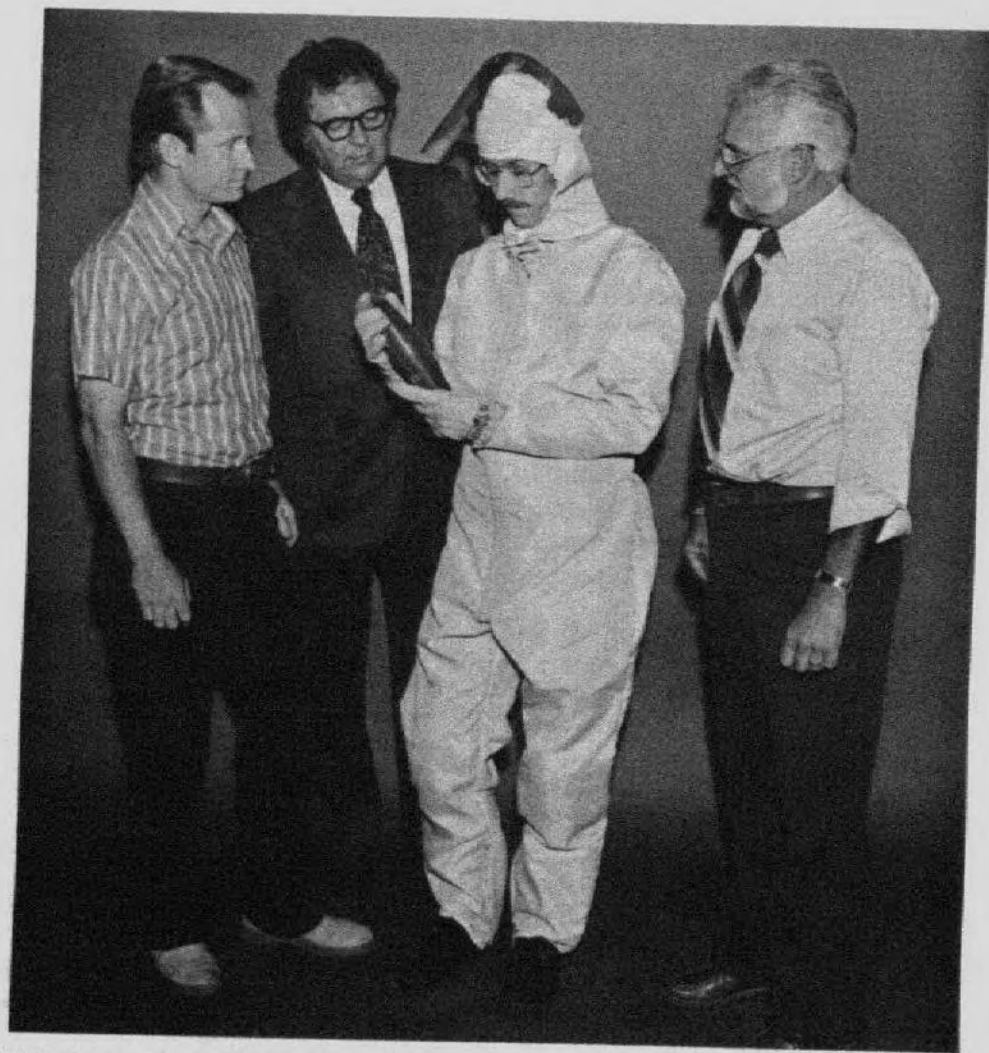
Sure is nice to leave a winner!

Credit Union news

The Moffett Credit Union is placing a moratorium on First Trust Deed real estate loans beginning September 8, 1978. After that date the credit union will not accept applications for these loans. Applications for other type loans will not be affected.

The temporary moratorium on real estate loans is due to the tight money market and tremendous loan demand. It is expected that the real estate loan program for First Trust Deeds will be resumed some time next year.

New safety equipment demonstrated



A plastic high pressure lamp safety shield and a new safety suit worn by Ames Associate Bill Myers is inspected by Richard Clayton (L) and Roland Michaelis (R), Photographic Technology Branch and by John Habermeyer, Ames Safety Officer.

The Photographic Technology Branch and the Safety Office have jointly acquired these safety suits, which provide protection from possible explosion when changing high pressure Xenon Arc projection lamps. These high pressure lamps are used in the movie projectors in the Main Auditorium; in special lamp units for research microscopes; and for other applications where high intensity illumination is required. The Photographic Technology Branch purchased two of these safety suits as part of its Safety Operating Plan. Specifications for the suits were based upon a report by NASA-Lewis Research Center investigations. This report and the suits are available for inspection and may be borrowed by other Branches. Contact should be made with either Roland Michaelis, Chief, Photographic Technology Branch, or John Habermeyer, Ames Safety Officer.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
78-145	Contract Specialist (STEP)	GS-5/7/9	ASR	Centerwide	9-15-78
78-146	Contract Specialist (STEP)	GS-5/7/9	ASA	Centerwide	9-15-78
78-147	Editorial Assistant	GS-5/6/7	ATP	Centerwide	9-8-78
78-148	Procurement Analyst	GS-7/9/11	ASB	Centerwide and Army	9-15-78
78-149	Supvy AST Measurement & Instrumentation Systems, Branch Chief	GS-14/15	RFS	NASA-wide and Ames-Army	9-25-78
78-150	Supvy AST Experimental Facilities & Equipment, Asst. Branch Chief	GS-13/14 (Temp NTE 1 year)	RFE	NASA-wide and Ames-Army	9-25-78

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
78-110	Contract Specialist	ASF	Carolyn Panzarella
78-117	Administrative Assistant	LM	Robert Hodge
78-121	Contract Specialist	ASL	Ava Johnson
78-128	Accounting Technician	AFC	Joseph Shields
78-129	Supervisory Progressman	RSP	Edward Rozewicz
78-140	Contract Specialist	ASA	Cancelled

Want ads Transportation

For Sale: Conversion Van (mini-home) Dodge El Dorado, 1976. Mileage 30,000. \$9520.00/best offer, new tires & Max wheels. Call (415)657-4611.

1969 Cougar XR7, excellent mech. cond. New paint, new top, PB, PS, ATE, AC. Asking \$1800 or best offer. Call 961-1901.

For Sale: 1975 VW Rabbit, 2 dr, 4-speed, AM/FM radio, 36K miles, good cond. \$2650. Call 328-7987 after 6 p.m.

'74 Honda 750. Excel. cond. 11K, 16" wheel, leather jacket & helmet, extras. \$1200 or best offer. 249-4719.

For Sale: 48,000 mi, original owner; baby blue 1962 Pontiac Catalina, 2-dr hardtop, A/T, P/S, deluxe radio. Immaculate interior, exc. exterior and mechanical condition. \$900. 593-3311 after 5 p.m.

For Sale: 1975 Toyota Corolla, 2-dr, 4-spd, 48K miles, radials, factory A/C, economical, 1 owner, very good cond. \$2500. 263-3097 evenings.

For Sale: 1969 Karman Ghia convertible, 60K miles, new brakes, very good cond. \$1800 or best offer. 327-2428 after 6.

Housing

For Rent: 3-br, 2-ba, in San Jose near fairgrounds. Fireplace, w/w carpets, 2-car garage, fenced. \$335/mo. 252-3937 evenings.

The Astrogram

Admin. Mgt. Building, Phone 965-5422

The Astrogram is an official publication of the Ames Research Center, National Aeronautics and Space Administration, Moffett Field, California, and is published bi-weekly in the interest of Ames employees.

Editor Meredith Moore
Associate Editor Marcia Kadota
Reporters NASA Employees

Deadline for contributions: Thursday between publication dates

For Rent: 3-br, 2-ba, near Cupertino. 2-car garage, fireplace, w/w carpets, large covered patio, fruit trees, fenced. Excellent neighborhood. 20 min to Ames. \$450/mo. 252-3937 evenings.

House for sale in Santa Clara. Priced \$5000 below market to sell fast by owner. Has 4 br, 2 ba, large yard and water softener. 248-3900 after 6.

Miscellaneous

Tire chains, Peerless, twist link for HR70, 78x15, and 7:00x15. 294-2682.

For Sale: 14' Flying Junior Sailboat, fiberglass hull, jib and main sails, new trailer, \$1000. 259-6069.

Radio-controlled airplane w/Kraft 5-channel radio, \$200; '71 Honda SL350 dirt bike, overhauled top end and Hooker headers, reliable transportation, \$300. 493-1509.

For Sale: GE gas dryer, \$60. 255-6585.

Get ready for Fall with flowers and vegetables sweet and tall. Plow in weeds and seeds for all your organic needs. Buy my 5HP Rototiller. Exc. Cond. \$150. 259-4618 evenings.

For Sale: 80 gal salt water aquarium. Can be converted to fresh water. Fully equipped with filters, pumps, lights, sand, decorations, and wooden stand with cabinets. \$175 or best offer. Call 732-0638.

Room additions, kitchen remodeling, custom cabinets, custom furniture, patios, decks. Reliable and BONDED. Call 683-4836 or 683-4629.

For Sale: Sears Kenmore zig-zag sewing machine, model 1755. Button hole and cam attachments. \$150. 733-9708.

For Sale: Haul-trailer, 8'x12', \$115; Kenmore washer, wht, still working, \$32.50; freezer, upright, 12 cu. ft., wht, \$37.50, still working. Call (415)657-4611.

For Sale: Court reporting machine with stand. Includes case and paper. \$225. Call 738-4400, ext. 332.

For Sale: Complete, ready-to-assemble, foldable kayak kits. Kayaks are the lightweight open cockpit touring type kayaks which are very stable and good for children as well as adults. Kits are new. Good price. Call 356-3829.

For Sale: 9-drawer bedroom dresser, \$125; maple student desk and chair, \$85; small girl's desk and chair, \$45. 252-4284 evenings.

For rent: Fully self-contained 22-ft, 6-sleeper motorhome. \$175 per week; 5 cents per mile. Call 732-4485.

Albacore fishermen: In the near future I'm going to charter an albacore fishing boat at Pellar Point, the same as I did last year. If you're interested in more information, send me your name, home address, and phone number by the first of September. First come, first served. Andre Bogart, mail drop 233-4.

For Sale: Paint gun, Electro, solid state, rotary, airless. 294-2682.

Radiant heater, Sears, portable, fan-forced, automatic thermostat. 294-2682.

Electronic control unit, 12 volt, for 1976 Dodge Charger. 294-2682.

Trailer tow hitch, with all electrical connections for 1976 Dodge Charger. Will fit other Chrysler models. 294-2682.

Auto polisher, Kraco Deluxe, 12-volt. 294-2682.

Lhasa Apso puppies. Beautiful blonde with black and white. AKC registered. Must sell, \$150. Call after 6 pm or weekends. (408)734-2678.

Tire and rim, 8:75-16-5 from ¾-ton Chevrolet truck. 8 lugs (never used). \$55 (or make offer) 252-4753.

Hayden Trans-Oil Cooler. Measures 24" long, 6" high, and 1.5" thick. \$15 (or make offer) 252-4753.

For Sale: Wall unit, 104" long by 85" high by 16" deep. Made in Spain. Solid wood. Has place for bar, glassware, some movable shelves. Separates across center (base and top piece). Will cover entire wall. Asking \$800. For more information call after 6 p.m. 739-4266.

PLEASE NOTE - DIRECTORY CHANGE NOTICE

MAIL STOP: 237-3 PHONE: 6311

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and

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The Astrogram

VOLUME XX NUMBER 23

The Planet Venus

Venus is the second planet from the Sun, and the closest to Earth. Because of its highly reflective cloud cover, cloud-shrouded Venus is the brightest object in the sky after the Sun and the Moon. Its year is 225 Earth days. Its mean distance from the Sun is 108.2 million kilometers (67.2 million miles), about three-quarters of Earth's distance from the Sun.

When Venus is closest to Earth, directly between Earth and Sun, the planet is only 42 million km (26 million mi) away. While Earth and Venus are almost twins in size and mass, they are extremely different in other ways. Earth is a water-rich planet on which life thrives.

Venus is a dry, hot and desolate world, apparently without life. Scientists want to know how two similar planets can evolve so differently and if there is any chance of Earth becoming like Venus.

Available evidence suggests that Venus has a dramatically rugged surface, but it is less mountainous than Earth and Mars. Its surface temperature is hotter than the melting points of lead and zinc, about 485° C (900° F), and the atmospheric pressure is about 100 times that of Earth. Surface features on Venus can never be seen because of its permanent cloud cover. The atmosphere of Venus appears to be predominantly carbon dioxide — about 97 percent. Only minute amounts of water vapor have been detected in it.

Venus has no significant magnetic field. So the planet's upper atmosphere interacts directly with the solar wind. Venus is one of the planets in our solar system which has no moons, the others being Mercury and Pluto. (Astronomers recently reported the detection of a moon around Pluto; if this observation is confirmed, then Mercury and Venus — the two smallest planets in the solar system — will be the only ones without natural satellites.)

(Continued on Page 2)

NASA CDP

NASA, as part of its management development plan, annually participates in selected fellowship programs sponsored by leading universities, colleges, foundations, the U.S. Civil Service Commission, and the National Space Club.

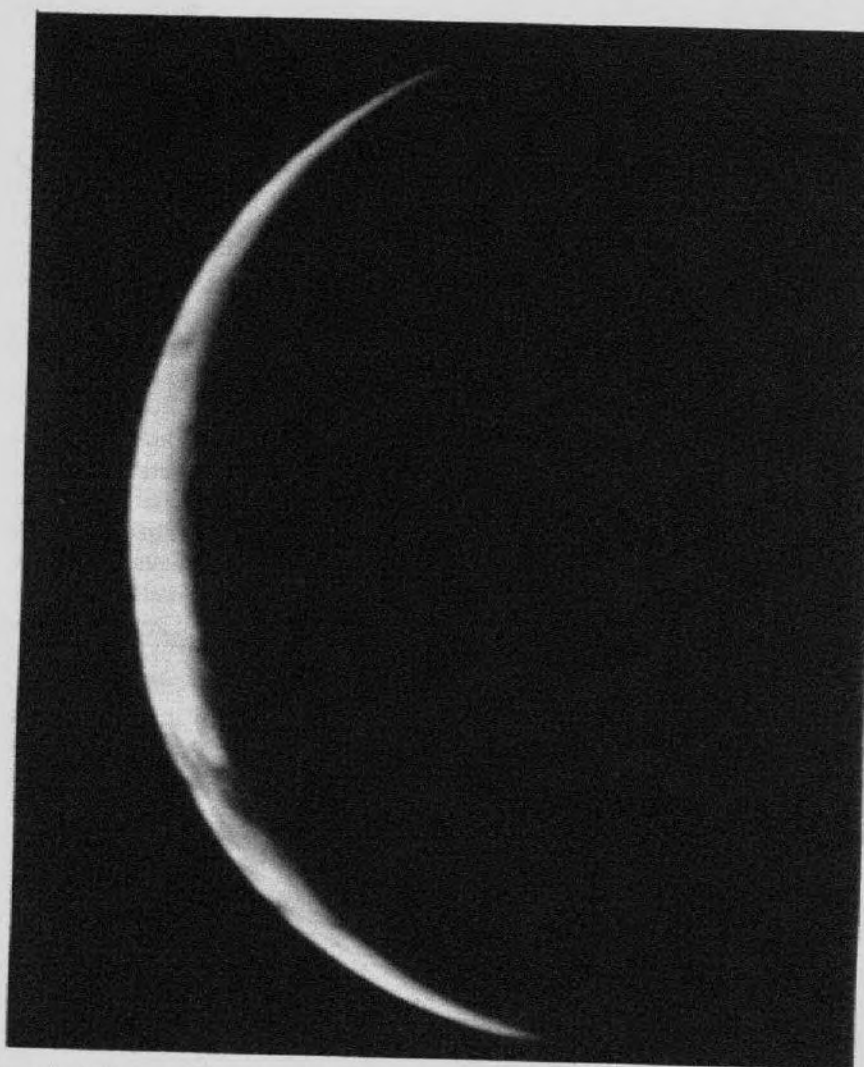
In late October, Ames management will be reviewing candidates for the following programs:

Stanford and MIT — Sloan Fellowships, Dryden Memorial Fellowship, Education for Public Management, Harvard PMD (Programs for Management Development), Maxwell Midcareer Development (Syracuse University), Woodrow Wilson (Princeton), Congressional Operations Fellowship, and Industrial College of the Armed Forces. The grade levels for these programs range from GS-11 through GS-16.

Persons interested in being considered for any of the named programs may contact John Leveen or Meredith Moore, ext. 5623/5624, by Friday, Sept. 22. The details of each program will be outlined at meetings to be held in late September.

Last look at Earth

September 7, 1978



The Pioneer Venus 1 Orbiter took this view of a crescent Earth about 24 hours after launch from Cape Canaveral as the spacecraft rapidly pulled away from Earth. The Earth appears as a crescent because Pioneer's course to Venus goes through the Earth's shadow on the opposite side of the Earth from the Sun.

At the time the picture was taken the spacecraft was 450,000 km (279,000 mi) above the northwest coast of Australia (in the dark hemisphere). The darker area in the lower portion of the crescent is an area in the West Indian Ocean. The Pioneer Venus Orbiter will reach the cloud-shrouded planet on December 4, 1978.

The image was taken as part of the calibration of the Orbiter's imaging instrument, the photopolarimeter. This instrument will take pictures, measure cloud particles and track ultraviolet absorbing markings in Venus' atmosphere when the Orbiter goes into a lopsided orbit around the planet.

This image has just been completed after enhancement by computer processing. Typical pictures of Venus will have a 30 km (19 mi) resolution. Pioneer Venus 1 will take pictures from Venus' orbit for eight months, when it will range, to as close as 150 km (90 mi) from the planet's surface.

Part-time permanent employment

Recently Ames was given the option by NASA Headquarters to staff some permanent positions on a part-time basis. While this authority will not change the effective number of "complement slots" allocated to the Center, it does permit greater flexibility in the ways jobs are structured. For example, one job could be "shared" by two people, each working 20 hours per week, or two different jobs established, each being performed only part-time.

Supervisors are being encouraged to consider which permanent jobs in their organizations could be performed either on a "shared" or part-time basis. Employees interested in such positions should

discuss the matter with their supervisors. Since the conditions of employment for part-time employees are different from those for full-time workers, applicants should also consult the Personnel Manager assigned to their organization.

Management approval of requests for conversion to part-time employment will hinge not only upon the extent to which such an action will permit an employee to remain in the work force, but also upon the impact on the organization's ability to perform its function.

Applications for conversion to part-time employment are available from the Personnel Management Branch (extension 5599/5600).

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Venus

(Continued from Page 1)

The mass, diameter and mean density of Earth and Venus are almost identical.

Venus' high overall density suggests a dense core something like Earth's nickel-iron core.

Venus receives almost twice as much solar radiation as Earth. As a result of the trapping of solar heat by its atmosphere, and as a result of the global atmospheric circulation, surface temperatures are uniformly high including the planet's polar regions which otherwise would have habitable temperatures. This trapping is called a "greenhouse effect." Venus' atmosphere allows passage of incoming solar radiation, but restricts radiation of heat outward.

In addition to carbon dioxide and water traces, Venus' atmosphere also has some carbon monoxide, hydrochloric acid and hydrogen fluoride.

Venus' permanent clouds are very tenuous, something like terrestrial smog. They are almost twice as deep as Earth's cloud layer, about 18 km (11 mi) thick, and are believed to be composed mainly of sulfuric acid droplets.

Somewhere below the bottom of the main cloud layers, the temperature becomes great enough for the sulfuric acid droplets to evaporate. A clear atmosphere results.

Enough sunlight gets through the clouds so that the surface appears as bright as on an overcast day on Earth.

From the Mariner cloud photographs in ultraviolet light, it appears that the stratosphere of Venus is in continuous high speed motion. The clouds seem to move about 360 kph (220 mph), circling the planet in four Earth days. However, the Soviet Venera landers showed that wind speeds in the deep atmosphere are extremely slow. Between the top and bottom of the Venusian atmosphere, an abrupt change in wind velocity appears to take place. This seems to occur at about 56 km (36 mi) above the surface, between the base of the clouds and the clear atmosphere below them.

The Pioneer flights may shed new light on some of the most puzzling questions in planetary science, such as the following:

- Why do two planets with about the same mass, probably formed out of similar materials and situated at comparable distances from the Sun, have atmospheres that have evolved so differently?

- Why is the surface of Venus baked by a searing heat, while Earth luxuriates in a climate friendly to life?

The answers to both of these questions depend on an understanding of the factors that govern the evolution of a planet's atmosphere.

Other major questions relating to Earth and Venus are these:

- Like Venus, Earth has a greenhouse effect which appears to be growing due to increases in carbon dioxide in our atmosphere. These increases come from large scale burning of fossil fuels since 1850. Could the Earth's greenhouse effect become strong enough to cause serious permanent rises in temperature?

- Since Venus presumably formed as close to Earth as it is today, we might expect Venusian oceans like our own. Yet there is almost no water on Venus. Where did the water go, if it ever existed?

One theory is that greater solar heating vaporized any oceans, and forced water vapor into the stratosphere. There it would have split into hydrogen and oxygen by solar ultraviolet radiation. The light-weight hydrogen would then have escaped to space leaving the oxygen behind. But there seems to be so little free oxygen left, that scientists wonder where it all went.

Stanford Instructional TV Network

AUTUMN QUARTER 1978-79

Course No.	Title	Units	Days	Time	Professor
AERO-ASTRO					
AA 244A	Free & Forced Movement of Structures	3	MWF	3:15-4:05	Ashley
AA 297	Seminar in Flight Mechanics & Control	1	W	4:15-5:30	Powell
COMPUTER SCIENCE					
CS 137A	Numerical Analysis	3	MWF	9:00-9:50	Henrici
CS 142	Language Features and Their Implementation	3	TTh	1:15-2:30	Wiederhold
CS 144A	Data Structures	3	MWF	3:15-4:05	Baskett
CS 155	Concrete Mathematics	3	MWF	1:15-2:05	F. Yao
CS 156	Intro to Mathematical Theory of Computation	3	MWF	10:00-10:50	Manna
CS 227	Intro to Robotics & Machine Vision - A.I. Approach	3	TTh	11:00-12:15	Binford
CS 242	Programming Language Design	3	TTh	1:15-2:30	Hennessey
CS 311	Advanced Computer Organization	3	MWF	11:00-11:50	McCluskey
ELECTRICAL ENGINEERING					
EE 111	Electronics	3	TTh	8:00-9:15	Gibbons
EE 180	Systematic Programming	3	MWF	9:00-9:50	Owicki
EE 181	Intro to Computer Organization, Machine & Assembly Languages	3	MWF	11:00-11:50	VanCleave
EE 201A	State-of-the-Art EE and Electronic Seminar	1	Th	11:00-11:50	Pantell
EE 202	Medical Electronics	3	TTh	3:35-4:50	Thompson
EE 211	Principles of Pulse & Timing Circuits	3	MWF	10:00-10:50	McWhorter
EE 216	Principles & Models of Semiconductor Devices	3	TTh	8:00-9:15	Estreich
EE 231	Lasers	3	TTh	9:30-10:30	Siegmán
			W	3:15-4:05	
EE 238	Electric & Magnetic Properties of Solids	3	TTh	1:15-2:30	Powell
EE 261	Fourier Transform & Its Applications	3	MWF	2:15-3:05	Goodman
EE 263	Digital Filtering	3	MWF	9:00-9:50	Widrow
EE 278	Intro to Statistical Signal Processing	3	TTh	1:15-2:30	Kailath
EE 293	Energy Processes	3	MWF	3:15-4:05	da Rosa
EE 322A	Basic Quantum Mechanics	3	MWF	1:15-2:05	Greenstein
EE 323A	Theory of Acoustic Devices	3	TTh	2:45-4:00	Kino
EE 326A	Electron & Ion Dynamics	3	MWF	1:15-2:05	Chodorow
EE 370	Information Systems Seminar	1	M	4:15-5:30	Williams
EE 376A	Information Theory	3	TTh	2:45-4:00	Gray
EE 380	Seminar on Digital Systems	1	W	4:15-5:30	Flynn
EE 381A	Design of Digital Circuits and Systems	3	MWF	11:00-11:50	Kumar
ENGINEERING					
ENGR 105	Control System Analysis & Design	3	MWF	9:00-9:50	Powell
ENGR 161	Engineering Economy	3	MWF	10:00-10:50	Ireson
ENGINEERING-ECONOMIC SYSTEMS					
EES 201A	Dynamic Systems	4	TTh	9:30-10:50	Luenberger
MATERIALS SCIENCE AND ENGINEERING					
MATS 205	Strength and Microstructure	3	TTh	9:30-10:45	Sherby
MATHEMATICS					
MATH 113S	Linear Algebra & Its Applications	3	MWF	2:15-3:05	Staff
MATH 130	Ordinary Differential Equations	3	MWF	10:00-10:50	Levine
MECHANICAL ENGINEERING					
ME 200A	Mathematical Methods in Mechanical Engineering	3	MWF	11:00-11:50	Ferziger
ME 231A	Dynamics	3	T	10:00-10:50	Kane
			Th	9:00-10:50	
ME 251A	Advanced Fluids Engineering	4	MWF	8:00-8:50	Johnston
ME 270	Engineering Thermodynamics	3	MWF	2:15-3:05	Reynolds
ME 297	Energy Policy Seminar	1	M	4:15-5:30	Starr
OPERATIONS RESEARCH					
OR 240	Linear Programming	3	TTh	4:15-5:30	Nahmias
STATISTICS					
STAT 217	Intro to Stochastic Processes	3	MWF	2:15-3:05	Mittal

Bloodmobile visit

The American Red Cross Blood Mobile will visit Ames Research Center on September 13, 1978, between the hours of 8:30 a.m. and 1:30 p.m. in Bldg. 239, Room B39.

"Penalty for Private Use"

Your attention is invited to statement on official government envelopes. PENALTY FOR PRIVATE USE, \$300. Official government envelopes will not be used for personal correspondence.

NASA/Ames Research Center

CALENDAR OF EVENTS

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

PREPARED BY:
VISITS COORDINATOR
965-5546 M.S. 253-1

<p>SEPT. 18 - Computational Fluid Dynamics Branch Seminar Speaker: Prof. Kyuichiro Washizu, Dept. of Aeronautics, Univ. of Tokyo, Tokyo, Japan Topic: Application of the finite element method to some aerody- namics problems. 1. Potential flow about a wing-body combination. 2. Lifting surface problem. Time: 10:00 a.m. Location: N-233, Room 227</p>	<p>SEPT. 19 -</p>	<p>SEPT. 20 -</p>	<p>SEPT. 21 - Thermo- and Gas-Dynamics Division/ Computation Seminar Speaker: Dr. R. K. Nangia, University of Bristol, Bristol, U.K. Topic: Flow separation using slender body theory Time: 10:00 a.m. Location: N-233, Room 227</p>	<p>SEPT. 22 -</p>
<p>SEPT. 25 -</p>	<p>SEPT. 26 - Space Science Div/Astrophysics Seminar Series Speaker: Prof. Randy Jokipii, Dept. of Planetary Sciences and Dept. of Astronomy, University of Arizona, Tucson, Arizona Topic: Galactic cosmic rays in the galactic wind Time: 3:30 p.m. Location: N-245 Auditorium</p>	<p>SEPT. 27 -</p>	<p>SEPT. 28 -</p>	<p>SEPT. 29 -</p>
<p>OCT. 2 -</p>	<p>OCT. 3 - Aeronautics Corporate Memory Seminar Speaker: Dr. R. T. Jones, NASA-Ames Research Center Topic: Recollections from an earlier period in American aeronautics Time: 1:00-3:00 p.m. Location: N-201 Main Auditorium</p>	<p>OCT. 4 -</p>	<p>OCT. 5 -</p>	<p>OCT. 6 -</p>

WEEKEND ACTIVITIES:

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

AMES RESEARCH CENTER
September 18, 1978 thru September 25, 1978
A LA CARTE MENU

MONDAY	Italian Pot Roast.....	1.45
	Shrimp Curry over Toast.....	1.30
	Choice of One: Whipped Potatoes or Buttered Sapghetti, Spinach, Carrots Vichy or Salad	
	Soup - Navy Bean.....	.30 & .45
TUESDAY	Booker T. Washington Pork Roast & Dressing w/Glazed Apples.....	1.45
	Baked Dinner Franks and Hot Potato Salad.....	1.30
	Choice of One: Parsleyed or Whipped Potatoes, Green Peas, Harvard Beets or Salad	
	Soup - Chicken Noodle.....	.30 & .45
WEDNESDAY	Braised Sirloin Tips, Creole Style and Rice.....	1.45
	Turkey Potato Pie with Pastry Crust.....	1.30
	Choice of One: Rice Pilaf, Mashed Potatoes, Buttered Carrots, Broccoli or Salad	
	Soup - Cream of Tomato.....	.30 & .45
THURSDAY	Special Menu today - OKTOBERFEST	
FRIDAY	John Hancock's Veal Birds with Mushroom Sauce.....	1.45
	Andrew Jackson Seafood Creole over Rice.....	1.30
	Choice of One: Whipped or Au Gratin Potatoes, Peas, Cauliflower or Salad	
	Soup - Seafood Gumbo or Borscht.....	.30 & .45
MONDAY	Teriyaki Steak over Rice.....	1.45
	Baked Stuffed Pepper with Creole Sauce.....	1.30
	Choice of One: Whipped or Au Gratin Potatoes, Green Peas, Beets or Salad	
	Soup - Old Fashioned Navy Bean.....	.30 & .45
DAILY SPECIALS	INCLUDES: A \$1.55 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	
	(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP.....	1.10
	DAILY DIET SPECIAL	
	(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

	HOF BRAU MENU	
	(Sandwich with Choice of French Roll or Bread)	
DAILY	Rare Roast Beef, Pastrami, or Corned Beef.....	1.65
TUESDAYS	Ham.....	1.65
THURSDAYS	Turkey.....	1.65
	Sausage Sandwich on French Roll.....	1.05

	AN ASSORTMENT OF SALADS, INCLUDING SHRIMP LOUIE.....	1.60
	AND CHEF'S SALAD (are available).....	1.45

National Aeronautics and
Space Administration
Ames Research Center
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NASA

Association for Continuing Education (ACE) courses

Fall Quarter/Semester 1978

Course number	Course title	Start and end dates	Day	Time
GOLDEN GATE UNIVERSITY MBA PROGRAM				
EC 292	Business Economics	9/25-1/17	MW	7-8:15 am
GM 263	Operations Management	9/28-1/18	Th	4:30-7 pm
MA 237	Marketing Planning	9/26-1/18	TTh	7-8:15 am
QA 272	Management Science Methods	9/26-1/16	T	4:30-7 pm
COLLEGE OF NOTRE DAME FOUNDATION PROGRAM (MANAGEMENT DEVELOPMENT courses denoted by †)				
BA C102.02	Financial Accounting †	9/26-12/5	T	5-6:45 pm
BA C153	Planning & Operations Management †	9/27-12/6	W	5-6:45 pm
BA C195	Principles of Organization Behavior †	9/25-12/4	M	5-6:45 pm
SUPERVISORY SKILLS PROGRAM				
BA C102.01	Introduction to Accounting	9/25-12/6	MW	12-1:00 pm
BA C113D	Principles of Effective Business Writing	9/26-12/7	TTh	12-1:00 pm
BA C135.01	Elements of Supervision	9/25-12/6	MW	12-1:00 pm
PROFESSIONAL DEVELOPMENT				
ET 400A	How to Use Microprocessors in Hardware Design (*)	9/26-11/2	TTh	12-1:00 pm
ET 400B	Introduction to Optical Engineering	9/27-12/6	W	5-6:45 pm
ET 500A	Digital Signal Processing (*)	9/26-12/7	TTh	12:15-1 pm
MATH C105	Introduction to FORTRAN	9/25-12/4	M	5-6:45 pm
PERSONAL DEVELOPMENT				
ENGL C8	Word Power: Using Words More Effectively	9/25-12/6	MW	12-1:00 pm
BAC 117	Personal Income Tax Preparation	9/28-12/7	Th	5-6:45 pm
MATH C102C	Beginning Business Math	9/26-12/7	TTh	12-1:00 pm
Short Courses				
PR 814	Effective Reading (*)	9/25-10/25	MW	12-1:00 pm
PR 816	Personal Shorthand (*)	10/30-12/6	MW	12-1:00 pm
PR 824	Communicating Successfully (*)	9/29-10/20	F	12-1:00 pm
PR 850	Creative Problem Solving	9/26-10/10	TTh	4:15-6 pm

(*) Videotaped Program

Lixiscope demonstrated

NASA scientist Dr. Lo I. Yin of Goddard demonstrated a small hand-held X-ray device, which he had developed, at the recent annual convention of the National Medical Association in Washington.

The device, called a Lixiscope (for Low Intensity X-ray Imaging Scope), is a gun-shaped instrument weighing about 0.67 kilograms (a pound and a quarter).

Dr. Yin does not expect his invention to replace present X-ray equipment, but he cites its potential as a new aide in medical treatment because of its mobility.

In military service, he suggests, the Lixiscope could be used to determine the extent of a soldier's wounds, or, in sports, to help diagnose an athlete's injuries.

Harry Press, chief of Radiology at Howard University Hospital and Chairman of the Radiology section of the Convention, stated those attending the convention showed great interest in the Lixiscope.

It is powered by a single penlight 2.7-volt battery and a small radioactive source. It is the product of a year's research efforts and Dr. Yin said it may soon be available through commercial production. NASA holds the patent rights for the Lixiscope but has said the license will be offered to potential developers at no cost. The Lixiscope is a product of the NASA Technology Utilization Program whose objective is to identify and transfer the benefits of aerospace technology to the general public for an overall improvement of the quality of life on Earth.

Reference list for NASA reports

The assistance of all Ames authors of NASA scientific and technical reports is being requested in the preparation of Reference lists. Reference lists are sent to the Library for the verification of availability and accuracy of references cited by the authors. If the references are correctly cited and properly formatted, considerable time and effort can be saved in searching by the Library Staff. This will result in a more timely processing of the report for final publication. Therefore, all authors and contract technical monitors are advised to observe the NASA referencing requirements as set forth in NASA Special Publication 7013, 1974, pp. 29-34.

Additional examples are given in NASA SP-7013 (copies of this SP are available from the Library, 202-3, Life Sciences Library, 239-13, and the Publications Office, 241-13).

Golf

Tournament chairpersons Dave and Charlene Banducci report the following winners of the point-par tournament at Pajaro Valley Golf Course on August 12:

First flight: 1 - Owen Koontz, 2 - Mike Orozco, 3 - Gary Lazzeroni, 4 - Larry Hochstein, 5 - Norm Martin.

Second flight: 1 - Les Collins, 2 - Tie: Charlie Nietubicz and Red Norman, 4 - Claudia Eddy, 5 - Tie: Phil Quattrone and Denny Chaussee.

Third flight: 1 - Norm McFadden, 2 - Roland DeConti, 3 - Alfred Llamas, 4 - Tie: Earl Menefee and Mike Rozewicz.

Fourth flight: 1 - Ina Rathert, 2 - George Rathert, 3 - David VanSickle, 4 - Tie: Bill Page and Charlene Banducci.

Closest to Hole: No. 7, Stan Brovarney; No. 11, Owen Koontz; No. 3, Ruth Richardson.

Science Fair winner briefed on Army R&D



Aeromechanics Laboratory of the Army Research & Technology Laboratories AVRADCOM, played host to Peter A. Sandborn, 18, the 1978 winner of the Army Superior Award of the International Science and Engineering Fair, during a recent three-day visit to NASA Ames.

Dr. Irving C. Statler, Aeromechanics Laboratory Director, Dr. Lawrence Carr, and Andrew Morse, aerospace engineers, showed Peter the operations of that Laboratory and explained how it meets Army aviation research objectives. Later, Peter was briefed on the mission and function of the Remotely Piloted Vehicle, the Aquila (see photo) by Dr. Richard M. Carlson, Director of the Army Research and Technology Laboratories.

No stranger to Ames, Peter spent last summer at the Center studying the electronic microscope, under the auspices of the Santa Clara Science Fair.

A June graduate of the high school at Fort Collins, Colorado, Peter plans to specialize in engineering physics at the University of Colorado.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
78-151	Secretary (Steno) or Legal Clerk (Steno) or Legal Technician (Steno)	GS-5/6 GS-5 GS-6	DL	Centerwide and Army	9-20-78
78-152	Secretary (Steno)	GS-5/6	LX	Centerwide and Army	9-20-78
78-153	Stores Receiving & Shipping Attendant	WG-5	AAS	Centerwide and Outside	9-22-78
78-154	Contract Specialist	GS-11/12	ASR	Centerwide and Outside	9-29-78
78-155	Contract Specialist	GS-11/12	ASR	Centerwide and Outside	9-29-78
78-156	Budget Analyst (Part-time)	GS-7/9	AR	Centerwide and Outside	9-29-78

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
78-108	Supv. Aerospace Engineer	FAE	Bencze, Daniel
78-109	Research Psychologist	LM	John C. Hemingway
78-112	AST, Manned Systems Engineering	LM	Richard Harrison
78-119	Aerospace Engineer	FSV	Cancelled
78-122	Aerospace Engineer, AST, Fluid & Flight Mechanics	FSA	Falarski, Michael
78-123	Aerospace Engineer, AST, Fluid & Flight Mechanics	FSA	Olson, Lawrence
78-124	Supv. Aerospace Engineer	FAR	Presley, Leroy
78-127	Secretary (Typing)	FLS	McDowell, Peggy
78-131	Voucher Examiner	AFP	Eleanor McDonald Helen Jensen
78-132	Electronics Technician	FSA	Morningstar, Alfred
78-133	Secretary (Typing)	FAX	McCracken, Lois

Want ads Transportation

For Sale: '69 Ford Galaxy 500, w/'70 351 V8, A/C, PB, PS, needs trans work. \$385. Myrna, 241-5287.

For Sale: '75 AMC "Sportabout" wagon, 258 engine, A/T, P/B, P/S, CB, 54,000 miles, original owner, new tires, new brakes and shocks, immaculate inside and out, economical family car, \$2850/offer, call: 296-5882.

For Sale: 1977 Dodge Diplomat 2-door sedan. Take over existing loan, car note 166.00. Call after 5:30 p.m. (415)367-0114. Excellent condition.

For Sale: 1965 Pontiac Lemans, runs good, good body, good tires, good work car. Call (408)253-3027 after 4:30 p.m. \$300 or best offer.

For Sale: 1977 Jeep CJ-5. 4-whl dr; 3-spd; V-8; pwr strng; hvy-dty susp., elec. & cooling systems; many other extras. \$5,600. Call Melinda 964-3819 eves.

Classic 1966 305cc Honda Hawk. New top end, cherry. \$400. (408)259-3346.

1977 Blue KZ 400, 2500 mi, 4 months old. Very clean and economical. 2 year warranty expires May 19, 1980. \$1275 or best offer. 258-3799.

For Sale: Honda 55, 120 mpg, 5900 miles, w/large sprocket for trail riding. 965-4943 home; 965-6500 ask for Leon; or 494-7555 ask for Taresa.

VW Rabbit, 1975, excellent condition. Only \$2390. Must sell soon. Call 967-5837 evenings.

'71 AMC "Matador" station wagon. New transmission w/1 yr guarantee, new tires, mags, A/T, P/B, original owner, clean, good condition, \$850, call after 6 p.m. 739-5373.

'77 Celicia GT, automatic, AM/FM stereo radio, 12,000 mi, \$5,000. After 5 p.m., 984-8168.

Housing

Appealing 3-bdrm, 2-bth home with garage, fireplace, crpts, easy care yard. Two blocks to bus line, near National and Los Gatos/Almaden Rd. \$450.00 mo., f.i. and dep. Call 356-2230 or call BIJOY at 735-0635.

Large Eichler, Immac., 4 br, 2 ba, FR, FP, 2-car gar, AEK, dshwshr, disp, new no-wax floors, new carpets and drapes, fenced private yard, prime Palo Alto location, close to NASA, schools and shopping. Lease. \$575/mo. Available 9/1. Call 961-0653 or 328-5211.

For Sale: 5-year-old 4-bdrm, 2-bth, home in South San Jose. Phone (408)578-6694.

Miscellaneous

Mini Bike, hvy duty, \$50; Boy's 24" 5-spd bike, \$18. 736-3984.

For sale to good home: 11-year-old roan/appy gelding "Charlie." Will ride English or Western. Exp. rider preferred. Asking \$400, including western tack. Boarded at private residence in Saratoga. Call 967-4813 evenings, ask for Sandy.

For Sale: Sears washer, Westinghouse electric dryer, \$45 each. Call 738-4849 after 5:00 p.m.

For Sale: Tent, Wenzel "umbrella" type, 9'x9' base, 7' center height, 5' eaves, 41"x7" rear window with screened flap, full awning over front; 7 oz Forester cotton drill fabric. Used twice. \$100.00. ALSO: Assorted camping equipment. Coleman 2-burner stove (white gas), air mattresses, shovel, dishes, large size coffee pot. Call between 6-8 p.m. weekdays or anytime weekends. 245-3838.

Wallpapering: Quality work at reasonable prices. References. Call Bobbie at 996-1847 or Rosalie at 253-4195.

For Sale: Elegant Noritake china coffee or tea service for six. 21 pieces includes 7 1/2-in. dessert plates. Edgemont pattern. A \$100 value for \$50. Call evenings after 5:30, 948-5073.

Wanted: Bus Pool riders. The Ames-Westgate commute bus needs more riders to ensure its permanency. In the a.m., the bus travels south on Miller to Bollinger, east on Bollinger to Lawrence Expressway, South on Lawrence to Westgate. The bus leaves Westgate at 7:22, goes west on Prospect to Stelling, north on Stelling to Stevens Creek and west to Highway 85, then to Ames for the 8:00 shift. Call Dave Cooper, ext. 6213, for additional details.

"Thank you"

I want to thank the members of the V/STOL Systems Technology Branch for the great retirement party they recently held in my behalf. I also want to thank the many friends whose attendance and participation made it such a glorious event. The tool kit will be most useful and its use will be a constant reminder of my colleagues at Ames.

Stew Rolls

I wish to thank all my good friends at Ames for their good wishes, their kindness and the blood they have given. Your warmth has meant everything to me.

Clarence Bocage

Health Insurance meeting

A representative from Blue Cross Blue Shield will be at Ames on Thursday, Sept. 14, from 9:00 a.m. to 11:00 a.m.

The meeting will be held in Room 237, Building 241, and will consist of a general presentation followed by a question and answer period. If you have specific questions about claims please bring all pertinent information along with you, so that your question can be more easily answered.

Admin. Mgt. Building, Phone 965-5422

The Astrogram is an official publication of the Ames Research Center, National Aeronautics and Space Administration, Moffett Field, California, and is published bi-weekly in the interest of Ames employees.

Editor Meredith Moore
Associate Editor Marcia Kadota
Reporters NASA Employees

Deadline for contributions: Thursday between publication dates

National Aeronautics and
Space Administration
Ames Research Center
Moffett Field, California 94035

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The Astrogram

VOLUME XX NUMBER 24

September 21, 1978

NASA uses computer to "witness" evolution of stars and galaxies

Using the world's most powerful computer as a miniature universe, man is now "seeing" the birth and evolution of stars and galaxies, including his own.

He is compressing 200 million years into several hours computer time—and reducing the distance light travels in 100,000 years to the length of a television screen—to witness galaxies collide and gas clouds beget embryonic stars.

These simulated cosmic events threaten to alter traditional ideas of how galaxies form, what shapes they assume and what happens when they collide.

Elliptical galaxies were thought to be oblate—shaped like a frisbee. But computer-generated elliptical galaxies by scientists at Ames, reveal their three-dimensional shape to be prolate—oblong, like a cosmic candy bar. And astronomers are lately reporting observational evidence confirming the computer's discovery.

It is beginning to appear to Ames researchers doing much of the pioneering work that computer

simulation of cosmic events is an important factor in fully understanding the dynamics of the universe. The astronomer now has a "laboratory" to test his theories and conduct his experiments.

A scientific team here at Ames led by University of Chicago astronomer Dr. Richard Miller and Ames astrophysicist Dr. Bruce Smith are instructing Ames' ILLIAC IV computer—the world's most powerful—to create swirling systems of 100,000 computer points. Each point represents the mass of about one million of our Suns to give the simulated galaxy a realistic total mass. Each point "feels" the gravitational tugs of its neighbors and "absorbs" energy from exploding supernova.

Over the past few years, Miller and Smith have developed a detailed computer program to study the formation and dynamics of galaxies. By coupling this code with the computational power of ILLIAC IV, they have proven computer simulation a very useful approach to explaining some basic astrophysical processes. (Continued on Page 2)

Dean Chapman named Hunsaker Professor



Dr. Dean R. Chapman, Director of Astronautics, has been named Hunsaker Professor at the Massachusetts Institute of Technology.

This visiting professorship is filled annually by a "scientist or engineer of distinction" to provide its occupant an opportunity for creative activity and to "bring inspiration" to MIT faculty and staff.

Dr. Chapman has been selected this year for his pioneering leadership in computational fluid mechanics. In this new field, wind tunnel air-flow around test aircraft can be simulated by a continuous series of computations in a large computer. This makes possible less expensive design and "wind tunnel testing" of new aircraft under a very wide range of computer-simulated conditions.

Dr. Chapman joined Ames in 1944 and since has made fundamental contributions to understanding of a number of aerodynamic flow problems. Other work of his has indicated that symmetrical button-like rocks found on Earth and known as Tektites come from the Moon, and that one particular shower is traceable to a specific large lunar impact crater.

Currently, Dr. Chapman administers organizations conducting planetary exploration projects, airborne infrared astronomy studies, thermal protection, materials science, gas dynamics, airborne studies of Earth, space, and planetary science research, and theoretical studies.

Dr. Chapman received his B.S., M.S. and PhD degrees from California Institute of Technology, completing PhD studies in 1948. He has taught at Cal Tech and Stanford. In 1952 he received the Lawrence Sperry Award of the American Institute of Astronautics and Aeronautics for contributions to aeronautics. He has also received a Rockefeller Public Service Award, the NASA Exceptional Scientific Achievement Award, the Ames Research Center H. Julian Allan Award, and is an elected member of the U.S. National Academy of Engineering. He will give the Dryden Research Lecture of the AIAA in 1979.



Ames researcher Dr. Richard Miller (front) and Dr. Bruce Smith, ASEE Summer '78 fellow, follow two computer simulated galaxies set on a collision course here at Ames. Width of the television screen represents a distance of 100,000 light years. Use of the computer as an astronomical "lab" may be the key to fully understanding the dynamics of the Universe.

Computer graphics simulation (Continued from Page 1)

Miller and Smith routinely follow up to 120,000 "stars" which are free to move about in a "cube"—a three-dimensional boundary of space created by the computer corresponding to 100,000 light years from edge to edge. They can order ILLIAC IV to rotate the cube so they can watch events from every angle. They can view swirling dust clouds from below or peer down at gigantic galaxial collisions.

Scientists at Ames have filmed several computer simulations. These films reveal events which were not expected according to traditional theories of astrophysics. For example, vast congregations of computer-generated stars repeatedly evolve into stable prolate bars. These bars are seen to rotate end over end like a football and may be the true shape of elliptical galaxies, formerly believed to have the shape of a frisbee.

The Ames team suggests that elliptical galaxies seen through the telescope are really the same prolate bars generated by the computer but seen in various projections. Astronomers view snapshots of galaxies projected onto the sky. They have only one view of the galaxy and can only guess its shape, since it would take millions of years to track the galaxy across the sky and view it from a different perspective.

But with a powerful computer, they can "examine" such galaxies from every direction and easily visualize its three-dimensional form. Confirmation of the computer's revelations concerning

the shape of elliptical galaxies has now been reported, based on observed velocities of the galaxy's stars.

When Miller and Smith set two 50,000-star galaxies on a collision course, there is much greater interaction between the colliding galaxies than was forecast. The galaxies are seen to first contract, their gravitational fields reinforcing each other. But then, they bounce back in a violent expansion that flings hundreds of stars out of the galaxies. The end result is a merger of the two galaxies but with considerably fewer stars.

Curiously, spiral-shaped galaxies such as the one to which Earth belongs—never appear for long without assuming the prolate bar shape. This perplexing situation means that the present state of knowledge concerning the physics of spiral galaxies is inadequate. Other basic physical processes must play a role in the formation of stable spiral galaxies.

Ames researchers are presently following simulated masses of gas as they coalesce and form stars. Some stars are programmed to have a short life, collapsing into brilliant supernova eruptions, spewing their masses out into the primordial galaxy. In this area, too, Miller and Smith are expecting surprises from ILLIAC IV. Perhaps more theories concerning the nature and evolution of the universe may change as the gigantic computer reconstructs events which took place at the beginning of time.

Pioneer 11 final

Mission controllers completed final course adjustments for the Pioneer 11 spacecraft's encounter with Saturn Sept. 1, 1979, man's first visit to the giant ringed planet.

Spacecraft controllers at Ames report Pioneer 11 is now locked onto a trajectory that will bring it to within 30,000 kilometers (18,000 miles) of the edge of Saturn's outer ring. The spacecraft will then swing under the plane of the rings to 25,000 km (15,000 mi.) from the planet's surface.

Pioneer 11 will take the first close-up color pictures of Saturn and its rings and make other first-time measurements of the planet's magnetic field, atmosphere and other features.

Without the course correction, Pioneer 11 would have flown by Saturn at a much greater distance (100,000 km—60,000 mi.) from the planet's surface. "We're going as close as we dare," said Jack Dyer, chief of mission analysis at Ames. Getting any closer to the ring edge would risk impact with orbiting fragments in the planet's ring plane.

From data transmitted by Pioneer to NASA tracking stations, it appears the spacecraft responded perfectly to a day-long series of commands to alter its trajectory. The course maneuver involved a series of timed rocket thrusts which nudged the spacecraft away from Earth and onto its desired flight path.

"Thank you"

I want to thank all of my friends at Ames for their support and kindness during my son Edward's accident. He is recovering well and apparently will have no major after-effects.

Sincerely,
Mary Lee Bodily

Quick Copy service

Quick Copy has the capability of reducing originals by a 30% factor—ideal for making multiple copies of originals up to 11 by 15 inches on 8½ by 11-inch paper.

The maximum number of copies is 50 per loose-leaf original, collating included, and still no charge to your organization.

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If you have urgent copying requirements don't hesitate to call us (Ext. 5827). We are as near as your telephone and are here to help whenever we can.

Satellite crop monitoring

The results of LACIE (Large Area Crop Inventory Experiment) will be the featured topic of study at the first major symposium dedicated to crop monitoring based on space-age technology to be held at Johnson Space Center, October 23-26.

LACIE is a three-year effort conducted by NASA, the U.S. Department of Agriculture and the National Oceanic and Atmospheric Administration, working with university and industrial research groups, to determine if wheat production in the major growing areas throughout the world can be estimated using data from satellites and the global weather observing network.

The LACIE experiment was begun in the fall of 1974 when the Agriculture Department felt the need for an improved source for global crop information. In the United States, USDA has already established a reliable and timely crop reporting system, but for many important wheat-growing areas in other parts of the world such information is limited.

The LACIE experiment involved the research, development and testing of an emerging technology known as remote sensing, combined with conventional weather data, to monitor and inventory agricultural commodities on a global scale.

Wheat, because of its great importance in trade and human nutrition, was the primary commodity investigated for this experiment. Electronic imagery from space was gathered by the Landsat orbiting satellites which continually scan the agricultural regions of Earth and provide data for area estimates. This Landsat data and other ground truth were combined with daily data from 8,000 worldwide weather stations to make timely predictions of crop area, yield and production in domestic and foreign wheat growing regions and to provide an early warning of problems.

The effort on the LACIE experiment took skills in many technical fields.

Earth resources scientists were involved in identifying the "signature" or appearance of wheat in the satellite data. Other scientists were involved in the development of techniques to estimate the growth stage and potential yield of wheat. Computer programs were written to examine weather conditions along with the crop yields achieved in past growing seasons in order to estimate the yield for the current growing season, and to combine area and yield estimates for wheat production reports.

The experiment centered on the hard red wheat crop in the U.S. Great Plains where detailed data is available for comparison and testing of the technology. Comparisons were made with USDA reports and ground truth gathered by county agents over many sites.

The LACIE activity is now nearing completion, and the results show that this new technology can be used effectively in improving the knowledge of global wheat production. The technology is believed to be generally applicable to other crops and the USDA is currently considering the use of this new technology as the data source to aid them in their responsibility to provide early warnings of significant changes in the global commodity production outlook.

The four-day symposium to be held at Johnson Center will conclude the experiment. People from government, industrial, agricultural and university communities around the world will be attending to learn more about this pioneering effort, and to discuss how this new technological tool can best be utilized to improve the world food situation.

NASA/Ames Research Center

CALENDAR OF EVENTS

(POST ON BULLETIN BOARD OR MAIL TO INTERESTED PERSONS)

PREPARED BY:
VISITS COORDINATOR
965-5546 M.S. 253-1

OCT. 2 - Aeronautics Corporate Memory Seminar Speaker: Dr. R. T. Jones, NASA-Ames Research Center Topic: Recollections from an Earlier Period in American Aeronautics Time: 1:00-3:00 p.m. Location: N-201 Main Auditorium	OCT. 3 -	OCT. 4 -	OCT. 5 -	OCT. 6 -
OCT. 9 - Columbus Day - Have a nice Holiday!	OCT. 10 - Aeronautics Corporate Memory Seminar Speaker: Bradford H. Wick, NASA-Ames Research Center Topic: Low Speed Aeronautical Research Time: 1:00-3:00 p.m. Location: N-201 Main Auditorium	OCT. 11 -	OCT. 12 -	OCT. 13 -
OCT. 16 - Combined Federal Campaign Kick-Off Rally Time: 10:30-11:30 a.m. Location: N-201 Main Auditorium Sponsor: Ben Briggs, Ext. 5897	OCT. 17 - Aeronautics Corporate Memory Seminar Speaker: Lloyd Jones, NASA-Ames Research Center Topic: High Speed Aeronautical Research Time: 1:00-3:00 p.m. Location: N-201 Main Auditorium	OCT. 18 -	OCT. 19 -	OCT. 20 - If you wish to have an event announced on this Calendar, please notify Linda Mackey, Visits Coordinator, Ext. 5546, Mail Stop 253-1. She must receive the information by Wednesday between publication dates in order to meet the deadline.

WEEKEND ACTIVITIES:

OCT. 14 -
Bay Meadows, "In" Field Party
Contact Judy Long, Ext. 5412 for tickets.
Sponsored by Ames Recreation Association.

ARA STORE HOURS: 12:00 - 12:45 TUESDAY & THURSDAY
LOCATED IN N-235 AMES CAFETERIA
NASA-AMES TOUR OFFICE - 965-6497

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Group
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Richard

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September 26, 1978 thru October 2, 1978

A LA CARTE MENU

TUESDAY	Breaded Pork Chop with Cream Gravy.....	1.45
	Beef Hash/Poached Egg.....	1.30
	Choice of One: Lyonnaise or Whipped Potatoes, Sweet Peas, Beets, or Salad	
	Soup - Fresh Vegetables.....	.30 & .45
WEDNESDAY	Lamb Curry with Noodles.....	1.45
	Baked Beans and Knockwurst.....	1.30
	Choice of One: Scalloped or Whipped Potatoes, Broccoli, Cauliflower Saute or Salad	
	Soup - Beef Barley.....	.30 & .45
THURSDAY	Swiss Steak and Vegetables.....	1.45
	Chili Burger and Rice.....	1.30
	Choice of One: Rissolle or Whipped Potatoes, Zucchini with Scallions, Beans or Salad	
	Soup - Minestrone.....	.30 & .45
FRIDAY	Mini Cod with French Fries.....	1.45
	Hamburger Steak with Bordelaise Sauce.....	1.30
	Choice of One: Fried Rice, Whipped Potatoes, Baby Limas, Corn O'Brien or Salad	
	Soup - Coney Island Clam Chowder.....	.30 & .45
MONDAY	Ham and Chicken Supreme.....	1.45
	Baked Stuffed Peppers.....	1.30
	Choice of One: Whipped Potatoes, Rice Pilaf, Buttered Lima Beans, au Gratin Spinach or Salad	
	Soup - Lentil or Fraciach Onion.....	.30 & .45
DAILY SPECIALS	INCLUDES: A \$1.55 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	1.80
	(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP.....	1.10
	DAILY DIET SPECIAL	
	(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

	HOF BRAU MENU	
	(Sandwich with Choice of French Roll or Bread)	
DAILY	Rare Roast Beef, Pastrami, or Corned Beef.....	1.65
TUESDAYS	Ham.....	1.65
THURSDAYS	Turkey.....	1.65
	Sausage Sandwich on French Roll.....	1.05

	AN ASSORTMENT OF SALADS, INCLUDING SHRIMP LOUIE.....	1.60
	AND CHEF'S SALAD (are available).....	1.45

October 3, 1978 thru October 9, 1978

A LA CARTE MENU

TUESDAY	Chicken Marengo and Rice.....	1.45
	Baked Polish Sausage and Red Cabbage.....	1.30
	Choice of One: Snowflaked or Scalloped Potatoes, Green Beans Almandine, Harvard Beets or Salad	
	Soup - Tomato, Macaroni and Onion.....	.30 & .45
WEDNESDAY	Roast Pork and Dressing and Glazed Apples.....	1.45
	Turkey Pot Pie with Biscuit Topping.....	1.30
	Choice of One: Mashed Potatoes, Yams, Cut Broccoli, Carrots or Salad	
	Soup - Old Fashioned Navy Bean or Beef Barley.....	.30 & .45
THURSDAY	Bar-B-Que Beef over Rice.....	1.45
	Sweet and Sour Cabbage and Polish Sausage.....	1.30
	Choice of One: Snowflaked or Au Gratin Potatoes, Corn O'Brien, Cut Broccoli or Salad	
	Soup - Fresh Vegetables.....	.30 & .45
FRIDAY	Sole Almandine.....	1.45
	Macaroni and Cheddar Cheese Omelette.....	1.30
	Choice of One: Whipped or Parsleyed Potatoes, Baby Lima Beans, Buttered Squash or Salad	
	Soup - Fulton's Market Clam Chowder.....	.30 & .45
	COLUMBUS DAY - HOLIDAY	
DAILY SPECIALS	INCLUDES: A \$1.55 ENTREE, VEGETABLE OR POTATO, SALAD ROLL & BUTTER, AND A 25¢ BEVERAGE.....	1.80
	(CHEF'S CHOICE) HOT SANDWICH AND LARGE BOWL OF SOUP.....	1.10
	DAILY DIET SPECIAL	
	(Chef's Choice) - Vegetarian Plate: 3 Vegetables, 1 Jello or Cottage Cheese or Poached Egg.....	1.50

	HOF BRAU MENU	
	(Sandwich with Choice of French Roll or Bread)	
DAILY	Rare Roast Beef, Pastrami, or Corned Beef.....	1.65
TUESDAYS	Ham.....	1.65
THURSDAYS	Turkey.....	1.65
	Sausage Sandwich on French Roll.....	1.05

	AN ASSORTMENT OF SALADS, INCLUDING SHRIMP LOUIE.....	1.60
	AND CHEF'S SALAD (are available).....	1.45

National Aeronautics and
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Ames Research Center
Moffett Field, California 94035

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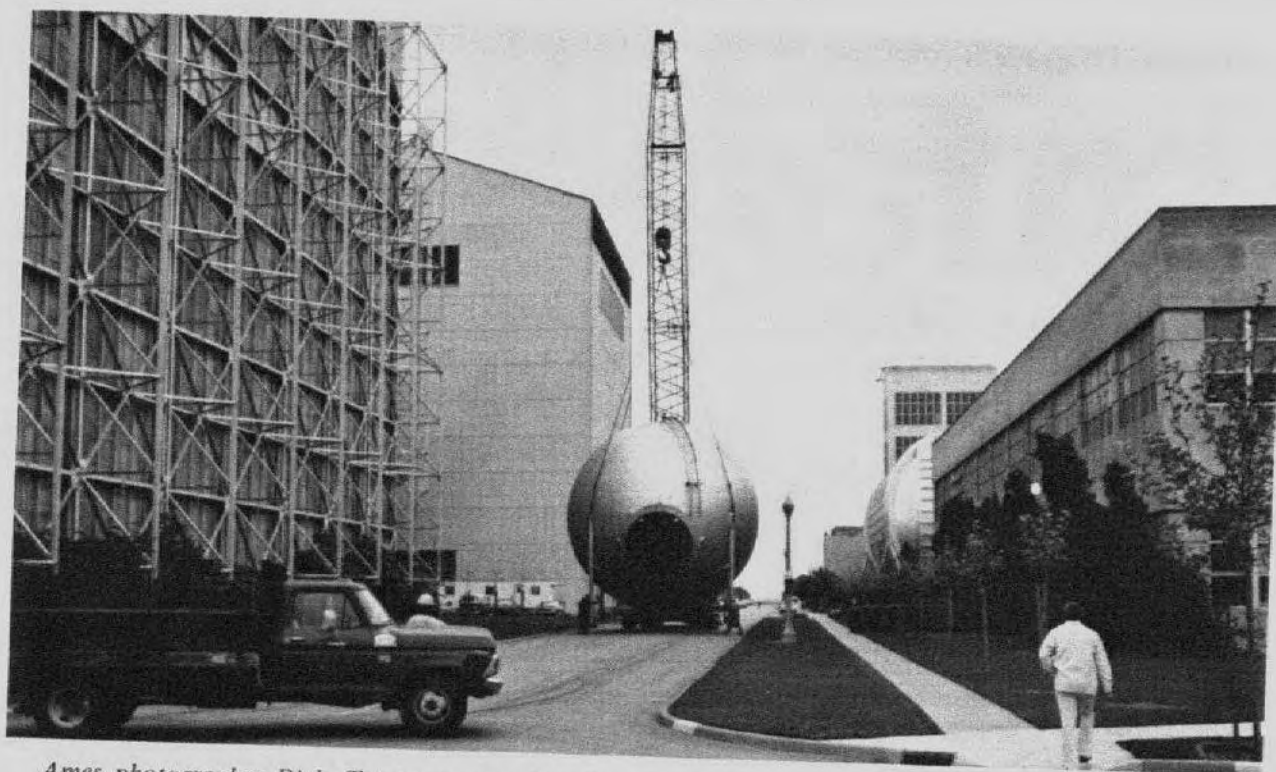
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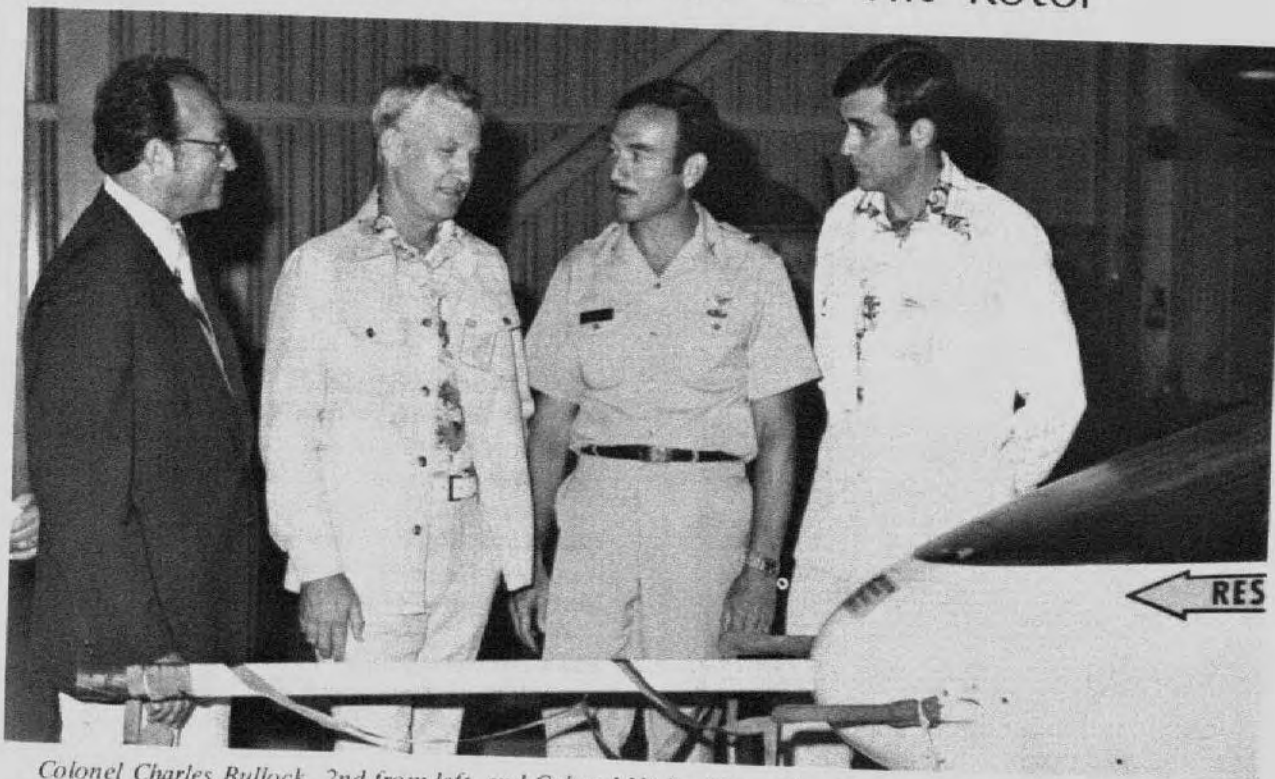
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Moving day



Ames photographer Dick Clayton caught this shot of a tedious maneuver which would make anyone of us nervous on moving day.

Colonels discuss XV-15 Tilt Rotor



Colonel Charles Bullock, 2nd from left, and Colonel Michael Pepe, far right, hear Lt. Colonel James H. Brown, Jr., center, discuss the recent successful XV-15 Tilt Rotor Research Aircraft tests held in the 40 by 80 wind tunnel at Ames. At far left, Dr. Irving C. Statler, Aeromechanics Lab Director, Army Research & Technology Laboratories AVRADCOM, looks on.

Colonel Bullock, Deputy Commander, and Colonel Pepe, Director for Procurement and Production, Army Aviation R&D Command, St. Louis, Mo., visited Ames to learn more of the NASA-Army agreement and the operations of the Army Laboratories here.

Lt. Colonel Brown, Aeromechanics Lab, is the Project Manager for the XV-15 Tilt Rotor Research Aircraft.

Attention all
GS-9's and above

Did you know that you are authorized to utilize the facilities of the Moffett Field Officers' Club? The Club is an "Open Mess" and you do not have to pay dues. A monthly club activity calendar is published and we can put you on the mailing list to keep you abreast of our activities.

We are certainly looking forward to serving you and yours very soon. For further information please call 966-5306 or drop by our office Monday through Friday during normal office hours.

Golf

The Ames Golf Club tournament at Pasatiempo on September 9 started out with great promise and ended up with slippery golfclubs and soggy shoes. For the hardy survivors the results at the finish were:

First Flight, 1st—Fred Johnson; 2nd—Mike Orozco; 3rd—Howard Matthews; 4th—Mitch Rado-
vich; 5th—Dave Banducci.

Second Flight, 1st—Les Collins; 2nd—Norm McFadden; 3rd—Don Davis; 4th—Jim Silver.

Third Flight, 1st—Charlene Banducci; 2nd—George Rathert; 3rd—Ina Rathert.

FEW members invited

Federally Employed Women, Inc. (FEW) was founded in the Summer of 1968 by a group of federally employed women in Washington, D.C. These women were interested in carrying out the intent of the President's Executive Order 11375, which added "sex" to the other forms of discrimination prohibited by E.O. 11246 in the federal service and by government contractors.

The South Bay Chapter, active since April 1975, is one of hundreds of FEW chapters throughout the United States and overseas. Membership includes employees of many federal agencies in this area (NASA, USGS, DCAA, Department of the Navy, VA Hospital et al.) who are concerned about equal employment opportunities in the Federal Service; interested in current issues affecting the status of women; willing to work with other active, aware women striving to solve the inequities in the system; interested in exploring a new career field; and looking for ways to enhance promotion potential in their present job. If you would like further information concerning FEW, please contact Etta Rosamond, extension 5979 or Lesley Whitaker, extension 5157.

Want ads

Miscellaneous (Continued from Page 4)

Twin bunk bed set with ladder. Early American, hardwood. Good condition. One box spring and mattress included. \$50.00. Ext. 5082.

Urgent: Ride needed: carpool from residence at Wolfe Road in Sunnyvale wanted. Call coop student, Mark Koenig, Ext. 6339.

FOR SALE OR TRADE—Classic science-fiction paperbacks. Also, small 4-drawer desk, \$15. Call 259-7419.

Upright Freezer, Dinette Set, Hoover Vacuum Cleaner, Clock Radio, Toaster, misc. Glassware, Electric Skillet, etc. Can be seen Saturday at 6317 Solano Dr., San Jose, or call Bob McCracken at 227-2480.

For Sale: Dinette Table with extra leaf, good condition, \$30. 736-3984.

For Sale: '73 Datsun Camper Top, white, fiberglass—SNUGTOP w/alum. windows. 6' bed. \$150. Call after 5 p.m. (415) 323-0194.

For Sale: GAF 805M Super 8 Sound Movie Camera with Boom Mike and GAF 3100S Autothread sound projector. 9 mo. old, barely used. \$290.00. Chuck Jackson, 248-5546.

FOR SALE: Whirlpool Dryer, 3 cycle, works good, \$70. Call Cathy 965-5854 or 793-1538.

HAVE A SEAT, table, desk, maybe a couch? Student would be happy to relieve you of unwanted furniture. You call, I'll haul. Keith, 446-3461 after 5 p. m.

Waterbed—(double) plain wood frame; mattress, liner and thermostat brand new, \$85.00. Call Dennis Padilla, 961-0449.

Heavy duty GE washer with permanent, soak and mini wash cycles. \$75. Pencrest dryer, \$45. Both are in working condition. Also, wall lamp, very good condition, \$15; twin size blankets \$10 ea., bedspreads \$5 ea. Men's tote bag, black vinyl, like new, \$20. 964-1725.

Ames Promotion Plan vacancies

Notice No.	Title	Grade	Org.	Area of Consideration	Closing Date
78-153	Stores Receiving & Shipping Attendant (closing date extended)	WG-5	AAS	Centerwide & Outside	10-06-78
78-157	Secretary (Typing)	GS-4/5	SPJ	Centerwide & Outside	10-06-78
78-158	Wind Tunnel Mechanic Foreman	WS-10 or WS-11	STF	Centerwide & Army	10-06-78
78-159	Aerospace Laboratory Foreman	WS-10 or WS-11	STF	Centerwide & Army	10-06-78
78-160	Personnel Clerk (Typing) or Clerk-Typist	GS-4/5 or GS-3/4	APX	Centerwide & Outside	9-29-78
78-161	Supvy. Electronic Technician (Branch Chief)	GS-12/13	RSE	Centerwide & Ames-Army	10-16-78
78-162	Supvy. AST Experimental Facilities and Equipment (Asst. Branch Chief)	GS-13/14	RFE	NASA-wide & Ames-Army	10-16-78

TO APPLY: Complete ARC 59 and submit to Mail Stop 241-6.

MERIT PROMOTION PLAN SELECTIONS

Notice No.	Title	Org.	Name
78-134	Secretary (Steno)	AS	Anita Borger
78-135	Secretary (Typ)	LM	Marie Rider
78-136	Secretary (Steno)	LMS	Janet TenHouten
78-138	Secretary (Typ)	DOQ	Bonnie McAfee
78-143	Secretary (Steno)	STP	Jenny Oliver (outside candidate)
78-150	Supvy. AST Exp. Fac. & Equipment (Temp-NTE 1yr.)	RFE	Cancelled

Want ads
Transportation

FOR SALE: 1965 Mustang, rebuilt 6 cyl. engine, A/T, R/H, new brakes, new tires, new paint—blue, \$1500., 493-1617.

For Sale! '72 Audi, 100LS AT (recently rebuilt). New brakes, less than 10 miles on engine overhaul, \$1350/best offer. 867-0958 after 5 p.m. or week-ends.

Ford Country Squire Station Wagon, 1966, 90,000 miles. Excellent running condition, clean inside and out, \$550. Call 494-1338.

Dodge, '74 Tradesman Camper Van, 4-wheel drive, V8, PS, CB, fully self contained custom int., loaded, \$8600 firm. Call 257-3987 or 366-2106.

1977 Dodge Diplomat 2-door, cruise control, AM-FM stereo, air conditioning, digital clock, lighted make-up mirror, Velour interior, undercoating, 318 engine with 11,500 miles. Like new. \$5,000 or \$2,000 cash and take over \$90.00 a month payments. Firm. Call 263-9083 after 5:30 p.m.

1974 Ford Pinto hatchback, automatic transmission, recent engine tune-up and carburetor rebuild, water pump and smog pump recently replaced, service contract on engine and transmission. \$1895. Call 258-6965.

FOR SALE: 1974 BMW R90/6, blue. Windjammer fairing, Ez Berg Custom Seat, \$2,200. Hubbard, 736-2963.

New Yamaha RD400 '77, blue, 2000 mi., 260 main, P4 jets, just tuned, K and N airfilters, air forks and gauge, Barnett racing clutch and springs. \$950. Call 926-9267 evenings.

Housing

FOR SALE: By Owner—3 br/2 ba, boat yard, w/w carpets, dishwasher, new paint, carefree yard, \$79,950. One mile from Ames, 784 San Lucas Ave., Mt. View. Call 263-6647 evenings.

For Rent: S. Tahoe cabin, 2 bath, sleeps 8, w/w carpet, fireplace, washer, dryer. 225-8043.

Miscellaneous

Car Pool Rider wanted for established car pool which already has three riders. Between Sunnyvale-Saratoga Rd., Fremont Ave., Wolfe Rd. area in Sunnyvale to Ames 8:00 a.m. and 4:30 p.m. Call Ext. 5537.

For Sale: Wrought Iron Railing—42" long x 36" high for stairway with 3-4 steps; shower pan—heavy duty fiberglass, 48"x34". \$15 each. Telephone 259-6069.

FOR SALE: Pecan Dining Room Set, 6 chairs, padded seats, excellent condition, \$375.00. 262-7981 after 5 p.m.

Twin bed with box springs and frame. Call 263-8825 evenings.

Hospital bed, Hollywood style, electric, no rails, waterproof mattress. Back bed board included. Like new. \$100.00 or best offer. Also double bed box spring and mattress. Good condition. \$25.00. 356-8853 after 6 p.m.

WANTED: People who would like to ski this winter in the Sierra and at Sun Valley. The Ames Ski Club provides opportunities to meet others who enjoy skiing, sharing the costs of transportation and accommodations, car-pooling and group rates. Call Jack Tunnell, Ext. 5262 or Denise Lucy, Ext. 5932 for more information.

For Sale: GE Dryer, gas, white, \$40.00. 255-6585.

For Sale: (1) 19 in. Black/White Zenith TV with portable stand. (2) 3-Drawer night stand, 15 1/4 in. x 18 in. x 28 in. Solid Mahogany. Call 965-5712.

Wanted—Stereo (3D) camera and accessories. Also old Viewmaster viewers and reels. Howard Frazee, 968-1938.

For Sale: 2 Toyota Engines, 1974 w/45,000 and 1976 w/30,000, complete. BOTH for \$350.00. Marty, at Ext. 6252.

AMES BASKETBALL LEAGUE—Anyone interested in forming a team or simply being placed on an already existing team, in the All-Ames Basketball league, please call Frank Steinle at Ext. 5850.

OPERA TICKETS: Norma, Sat. Sept. 30, 1:30 p.m.; Billy Budd, Sunday, Oct. 1, 2:00 p.m.; La Boheme, Sat. Nov. 4, 1:30 p.m. Ext. 5184 or 851-0137 evenings.

For Sale: Sofa plus chair—stuffed style, \$650; Dinette set \$85; three rugs: 12x12 earthy sculptured \$75, 9x12 red shag \$65, 9x12 lime shag \$65, all with pads. Call 629-3267.

Single parent seeking clean 2 br. house/duplex with yard and fireplace to rent/lease. Prefer within 15 minutes of Ames and under \$350/mo. Please call 378-6449 after 6 p.m.

Cedar Chest. 296-8594. Call after 4:30.

Man's bike, 3 speed—\$50; man's bike, 1 speed—\$40; man's bike, 10 speed—\$55. Boy's 20", 1 speed—\$40; boy's 20", 3 speed—\$45; boy's 20" Schwinn—\$55; boy's 20", 1 speed—\$45; boy's 20" MotoCross—\$50. Call 296-8594.

For Sale: Children's toys: slide, wagon, hobby horse, zoom-zoom, tricycle. Call 736-6947 after 5:00.

Ski Boots, like new, size 8-9, \$20.00. 248-0427 after 6 p.m.

FOR SALE: Twin-size mattress and box spring set. Used only 3 months. \$50. Also, bedroom nightstand, excellent condition, \$25. Call Mary, 738-3393 after 5 p.m., weekdays. (Cont. on Page 3)

The Astrogram

Admin. Mgt. Building, Phone 965-5422

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